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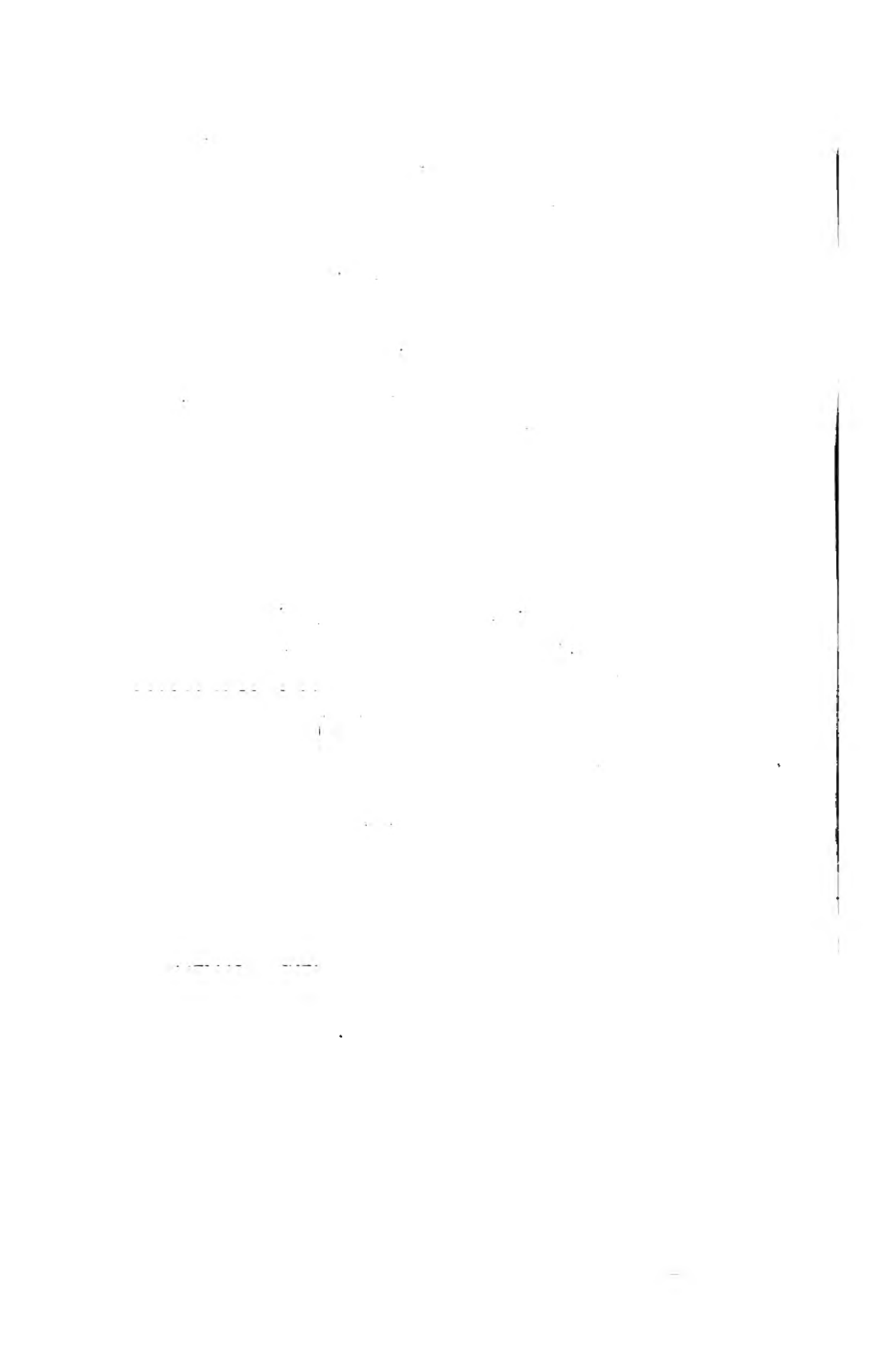
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STATE OF ILLINOIS  
STATE GEOLOGICAL SURVEY  
FRANK W. DeWOLF, Director

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BULLETIN No. 22

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**THE OIL FIELDS**  
  
OF  
  
**Crawford and Lawrence Counties**

BY  
  
**RAYMOND S. BLATCHLEY**

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# CONTENTS.

## CHAPTER I.

### *Historical, Theoretical, and Geological Aspects of the Illinois Fields.*

	PAGE.
Object of report.....	11
Methods of study.....	11
Acknowledgments.....	12
Historical review of oil developments in Illinois.....	12
Original and accumulation of oil .....	16
Origin of oil.....	16
The inorganic theory.....	16
The organic theory.....	17
Circulation and accumulation of oil.....	18
General considerations.....	18
The porous stratum.....	21
Impervious cover.....	22
Geological structure.....	22
Water saturation.....	24
General geology of Illinois relating to oil and gas.....	24
Introduction.....	24
Stratigraphy.....	25
Areal extent of the formations and oil sands.....	27
Structure.....	32
Stratigraphy of Crawford and Lawrence counties.....	32
General statement.....	32
Crawford county.....	32
Logs.....	33
Stratigraphy.....	52
Pleistocene.....	52
Pennsylvanian.....	53
McLeansboro formation.....	53
Carbondale formation.....	53
Pottsville formation.....	54
Lawrence county.....	54
Logs.....	54
Stratigraphy.....	82
Pleistocene.....	82
Pennsylvanian.....	82
McLeansboro and Carbondale formations.....	82
Pottsville formation.....	82
Mississippian.....	83
Birdsville and Tribune formations (upper portion of Chester group).....	83
Ste. Genevieve formation.....	84
St. Louis formation.....	85

## CHAPTER II.

### *General Description of Features of the Main Oil Fields.*

Introduction.....	86
Field work.....	86
Topographic surveys of the area.....	86
Levels in the oil fields.....	87
Hardinville quadrangle.....	87
Sumner quadrangle.....	89



## Contents—Continued.

	PAGE.
<i>Field work—Concluded.</i>	
Geographic positions of quadrangles.....	91
Hardinville quadrangle.....	91
Sumner quadrangle.....	93
Vincennes quadrangle.....	93
Elevations of oil wells.....	94
Collection of well records.....	94
Geological aspects.....	95
General statement.....	95
Local names of sands.....	95
Correlation of sands.....	95
Altitudes of sands.....	95
Tables of well data.....	96
Contour maps.....	96
Cross-sections.....	96

### CHAPTER III.

#### *Detailed Geology of the Crawford County Field.*

General features of the oil field.....	97
Detailed structure of the district.....	99
Relations of structure to oil and gas.....	100
Relations of salt water to structure.....	103
Conclusion.....	104

### CHAPTER IV.

#### *Detailed Geology of the Lawrence County Field.*

General features of the oil field.....	105
Detailed structure of the district.....	106
The "shallow" sand.....	106
Bridgeport sand.....	106
Buchanan sand.....	107
Detailed structure.....	107
"Gas" sand.....	108
Detailed structure.....	109
Kirkwood sand.....	109
Detailed structure.....	110
Tracey sand.....	111
Detailed structure.....	112
McCloskey sand.....	112
Detailed structure.....	113
Cross-sections.....	114
General statement.....	114
Cross-section A-A.....	114
Logs.....	115
Cross-section B-B.....	123
Logs.....	123
Cross-section C-C.....	125
Logs.....	125
Cross-section D-D.....	130
Logs.....	130
Relations of structure to oil and gas.....	135
Oil.....	135
Petty township.....	136
Bridgeport township.....	137
Lawrence township.....	137
Dennison township.....	137
Gas.....	138
Petty township.....	139
Bridgeport township.....	139
Lawrence township.....	140
Dennison township.....	140

## Contents—Concluded.

	PAGE.
Relations of structure to salt water.....	140
Petty township.....	140
Bridgeport township.....	140
Lawrence township.....	140
Dennison township.....	141

### CHAPTER V.

#### *General Summary of Geological Conditions in Crawford and Lawrence Counties.*

General statement.....	142
General structure of the region of the LaSalle anticline.....	142
Detailed features of the fields.....	143
Prospective pools.....	144

### CHAPTER VI.

#### *Economic Features of the Illinois Fields.*

Introduction.....	145
Development of oil properties.....	146
Forenote.....	146
Leasing.....	147
Choosing a well-site.....	151
Drilling.....	151
Shooting a well.....	155
Lease equipment.....	157
Cleaning out and tubing the well.....	157
Tanks.....	157
Loading racks.....	158
Power and boiler houses.....	158
Pull-rods and pumping discs.....	159
Pumping jacks.....	159
Removal of salt water and steaming oil.....	159
The approximate cost of oil wells.....	160
The cost of operating a lease.....	161
Investments in oil properties.....	162
Buying, transporting, and storing oil.....	163
Buying oil.....	163
Transporting the oil.....	164
Storing the oil.....	165
Independent oil companies.....	166
Prices and pipe-line runs of Illinois oil.....	167
Prices of Illinois oil.....	167
Pipe-line runs and stocks of Illinois oil.....	169
Summary tables.....	169
Natural gas in Illinois.....	181
Tables of well data (appendix).....	185

## ILLUSTRATIONS.

---

PLATE.	PAGE.
1A. Map showing the oil and gas fields of Southeastern Illinois and the quadrangles covered by this report.....	Frontispiece
1B. Section across southern Illinois through, Monroe, Clinton and Lawrence counties.....	32
II. Columnar sections in Crawford county.....	34
IIIA. Columnar sections in Lawrence county.....	54
IIIB. Diagram showing correlation of the Robinson and Bridgeport sands.....	84
IV. Base map of the Crawford county oil field—Southern half—showing developments to Jan. 1, 1909.....	Pocket
V. Crawford county oil field showing structure contours on top of the Robinson sand—first lens.....	Pocket
VI. Base map of the Lawrence county oil field showing development to July 1, 1911....	Pocket
VII. Lawrence county oil field showing structure contours on top of the Buchanan sand..	Pocket
VIII. Lawrence county oil field showing structure contours on top of the "Gas" sand.....	Pocket
IX. Lawrence county oil field showing structure contours on top of the Kirkwood sand..	Pocket
X. Lawrence county oil field showing structure contours on top of the Tracey sand....	Pocket
XI. Lawrence county oil field showing structure contours on top of the McClosky sand..	Pocket
XII. A-A longitudinal section, Lawrence county, along the crest of the LaSalle anticline and through the center of the field.....	116
XIII. B-B cross-section, Lawrence county, across the northern end of the oil field.....	124
XIV. C-C cross-section, Lawrence county, across the structural dome in Petty township..	126
XV. D-D cross-section, Lawrence county, across the southern end of the oil field.....	132
XVI. The standard derrick.....	146
XVII. The steel derrick.....	148
XVIII. A—A nitroglycerine plant.....	150
B A storage magazine for nitroglycerine.....	150
XIX. A—Oil tanks under shed.....	152
B—A pumping disc.....	152
XX. A—A modern tank-car loading rack.....	154
B—An early tank-car loading rack.....	154
XXI. A—A power or pumping house.....	156
B—A boiler house.....	156
XXII. A—The standard pumping jack.....	158
B—The steel pumping jack.....	158
XXIII. A—A third type of pumping jacks.....	160
B—A town lot well in Bridgeport, Ill.....	160
XXIV. A—A waste pit for burning waste oil.....	162
B—The effect of fire from waste oil on streams.....	162
XXV. A—The Ohio Oil Company's pumping station, Stoy, Ill.....	164
B—The Tidewater Pipe Line Company's pumping station, Stoy, Ill.....	164
XXVI. The Ohio Oil Company's pumping station, Bridgeport, Ill.....	166
XXVII. A—A portion of the Ohio Oil Company's tank farm, Stoy, Ill.....	168
B—A cleaning rig.....	168
XXVIII. A 35,000 bbl., tank fire.....	170
XXIX. The tank after the fire.....	172
XXX. A supply yard in Bridgeport.....	174
XXXI. A—A gas well.....	176
B—A gas well with water retainer.....	176

## LETTER OF TRANSMITTAL.

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STATE GEOLOGICAL SURVEY,  
UNIVERSITY OF ILLINOIS, JANUARY 30, 1913.

*Governor E. F. Dunne, Chairman, and Members of the Geological Commission:*

GENTLEMEN—I submit herewith a report on the oil fields of Crawford and Lawrence counties, Illinois, and recommend that it be published as Bulletin No. 22.

The author, Mr. Raymond S. Blatchley, has been on the staff of the survey since 1908 and has devoted a large part of three years to the studies presented here.

The colored maps which accompany the report present information of great commercial value in locating future wells in the district. The kindness of property owners and oil operators who have contributed information freely to the survey is hereby acknowledged, and confidence is expressed that they will find the report almost invaluable.

Very respectfully,

FRANK W. DEWOLF,  
*Director.*



## THE OIL FIELDS OF CRAWFORD AND LAWRENCE COUNTIES, ILLINOIS.

By Raymond S. Blatchley.

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### CHAPTER I.

#### Historical, Theoretical, and Geological Aspects of the Illinois Fields

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#### OBJECT OF REPORT.

This report presents the results of a study of the geologic conditions in the southern half of the eastern Illinois oil fields. The specific area of investigation lies in the southern half of Crawford and the northern portion of Lawrence counties, in portions of the Hardinville, Sumner, and Vincennes quadrangles (See Plate IA.) The object is to discuss the control of the accumulation of oil and gas in these fields and to present facts which further confirm the anticlinal or structural theory for the concentration of oil and gas in raised formations. It is also possible that additional proof is added to support the theory of the origin of oil from organic remains buried in limestone and shales. The report also discusses the stratigraphy and describes the commercial features peculiar to this territory, including production, costs, methods of transportation and storage, field operations, leasing, etc. It is desired to preserve in printed form all available records of the territory, particularly for use in future stratigraphic and structural studies and for reference by the operators.

#### METHODS OF STUDY.

The method of study was to map by means of contour lines, or lines through points of equal altitude, the geologic structure of the producing sands. The contours were made upon the positive altitudes of the sands above a datum plane 1,500 feet below mean sea level. These maps show the oil sand as if everything above it had been removed. The undulations, slopes, basins, etc., are clearly defined. In this way the oil, gas, and water relations to the structure are studied. In addition to the contour maps cross-sections were made along the crest of the anticline and crosswise to it. These graphic sections are intended merely to make

clearer the contour maps. The records along the selected lines are plotted on a uniform scale and are placed in their proper positions along the section, with regard both to the elevation of the wells above sea level and to their linear distance from one another. The points at which the cross-section lines cut the contours are measured and marked on the section. All points representing a particular horizon are connected. Thus, a mechanical means of ascertaining structural features was developed and significant facts were revealed.

#### ACKNOWLEDGMENTS.

The taking of elevations and logs of the wells within the portion of the oil fields covered by this report began in the summer of 1908. The writer was assisted in this work by Douglas Wright in the Crawford county portion of the Hardinville quadrangle and by J. C. Jones in the Lawrence county division. The leveling in the Sumner and Vincennes quadrangles was completed the following summer with the assistance of W. E. Deuchler, levelman, and Douglas Wright and H. H. Johnson, rodmen. A final review of the Lawrence county fields was made in 1911 with the assistance of D. G. Thompson. The report would not have been possible except for the hearty coöperation of all operators who furnished well records, maps, and other information. Much help was given in the stratigraphic studies by Dr. J. A. Udden who made an intimate examination of well samples from eleven wells within the investigated area. Special thanks are due the officials of the Ohio Oil Company, Marshall, Ill., for samples from a number of wells in the region. These were saved at much trouble and expense. Dr. Stuart Weller of the University of Chicago gave helpful consultation relative to the stratigraphy of the Mississippian rocks. To all of these individuals the writer expresses his appreciation and thanks.

#### HISTORICAL REVIEW OF OIL DEVELOPMENTS IN ILLINOIS.

In the main fields of Illinois, exclusive of producing areas elsewhere, there have been drilled, during the past seven years, over 20,000 wells in a producing territory which covers about 250 square miles. The following notes sketch the history of drilling from the earliest days:

In the earlier part of the "sixties" the first oil excitement spread over the eastern United States and extended westward to Illinois. In 1865 the first wild-catting took place in Clark county about 8 miles north of Casey, in Parker township. Here, several holes were put down in attempts to locate oil and gas but the work was abandoned. The small amount of oil found in the wells perhaps would have been greater had proper casing been used. This would have shut off the salt water, which, as a matter of fact, probably drowned out the oil and prevented an earlier discovery of the present immense field.

About this time, oil and gas were found accidentally in Montgomery county, near Litchfield. Coal prospecting from the floor of one of the mines led to deeper drilling and the discovery of a strong flow of salt water which threatened for a time to flood the mine. Another coal pros-

pect near the mine discovered a small quantity of oil and gas. The oil and water from this drill hole leaked into a sump in the mine, where for many years oil was skimmed from the top of the water and utilized.

During the "eighties," when new prospecting was taking place at various points in Illinois, the previous finding of oil at Litchfield led to renewed drilling which brought in several gas wells in that vicinity. In 1882 a well was drilled about 2 miles south of Litchfield, which was reported to show about 400 pounds gas pressure. This well was apparently first drilled to 580 feet without success. Two years later it was drilled 200 feet deeper, where water-bearing sand was tapped. The gas was secured at 640 feet and had exceptional pressure. The flow of salt water, however, was too strong to be plugged successfully and, consequently, drowned out the gas. In 1886 a number of wells that yielded both gas and oil were drilled in the vicinity of Litchfield, to an average depth of about 650 feet. In all, between the years of 1882 and 1889, about thirty wells were drilled.<sup>1</sup> The majority of them were of short life but five or six produced a small amount of oil up to the year 1903. All are abandoned at the present time.

Gas was discovered in Pike county in 1886 while drilling for water in the N. W.  $\frac{1}{4}$  S. E.  $\frac{1}{4}$  section 1, Derry township. It was found at a depth of 186 feet.<sup>2</sup> This destroyed chances of a good water supply so a second well was drilled on the same farm a short while afterwards. Gas was secured in this well at the lesser depth of 168 feet. Both wells were abandoned because of lack of facilities for taking care of the gas. Drilling was then suspended in this part of the State for 15 years, or until 1905. In that year Mr. William Irick drilled a well for water on his farm and, as in the previous cases, met a strong flow of gas. He, however, piped it to his house for domestic use. There immediately followed a development of this area, which, in a little over a year, brought in over thirty wells. All but six of these produced gas, but no oil was found. The gas horizons are between 75 and 350 feet below the surface. The field at the present time covers an area about 10 miles long and 4 miles wide. The gas accumulation is governed by a small fold in the Niagara limestone.

Similar prospecting took place in 1888 near Sparta in Randolph county. Home capital was enlisted and a well that yielded a good pressure of gas<sup>3</sup> was drilled to a depth of 850 feet. This encouraged further drilling and up to the year 1894, 22 wells were put down. Of these, over twelve yielded gas, and four of them had initial pressures between 150 and 250 pounds to the square inch. The average life of the wells was about seven years.

The next recorded wild-catting took place in 1900, and indirectly resulted in the discovery of the main oil field. A company styled the Crawford County Oil, Gas and Coal Company drilled a well in the S. E.  $\frac{1}{4}$  section 35, Robinson township, Crawford county.<sup>4</sup> The well reached a depth of 820 feet where it was abandoned because of the caving of the strata and the tapping of a strong vein of salt water. The same company shifted operations in the following year, 1901, to the D. C.

<sup>1</sup> Mineral Resources of the United States for 1889, p. 353.

<sup>2</sup> Savage, T. E., Pike County gas field: Bull. Ill. Geol. Survey No. 2, 1906, p. 83.

<sup>3</sup> Report Illinois Board World's Fair Commissioners, 1893, p. 183.

<sup>4</sup> Blatchley, W. S., Oil Developments in Illinois to 1904: Bull. Ill. Geol. Survey No. 2, 1906, p. 14.



Jones farm, in the southwest quarter of section 22 of the same township. A well drilled here to a depth of 1,040 feet secured a small amount of gas. Thus, the efforts of the company to locate "fuel" were rewarded slightly and with further hope, they drilled to 1,190 feet. At this point they met a strong vein of salt water and abandoned the well. The company attempted other wells on the same farm in the years 1901, 1902 and 1903, but, in each case, lost their tools. The sixth attempt was rewarded, in 1904, by the finding of small amounts of oil and gas between 900 and 1,200 feet. The bore was carried to 1,330 feet but was abandoned. It was but eighteen months after this that the main productive field was opened up within a few miles of this area.

The suggestion of an oil field in the vicinity of Casey prompted by the earlier prospecting of the "sixties," led Col. L. D. Carter of Oakland, Ill., to secure the services of J. J. Hoblitzel & Son, of Pittsburgh, Pa., in re-drilling this area. A large block of lease was gathered up, and early in the spring of 1904 a well was started on the Young farm near Oilfield. This well produced a good pressure of gas and some oil. The gas was cased off and used for field operations but the oil yield was insignificant and was discarded. A second well was completed in the same year on the J. S. Phillips farm in the northeast quarter of section 18, Parker township. It produced 35 barrels of oil. Other wells were started in the same year in this vicinity and in 1905 about 100 square miles of territory was being drilled. Of this about 60 square miles were eventually found productive. These fields are called the "shallow" area because the oil comes from a depth of between 400 and 600 feet. Drilling was active until 1909, when the boundaries of the productive territory for this section of the oil fields were pretty well established. In 1909 there was a decreasing development and at the present time it has practically ceased. A great many of the original wells are yielding so poorly that they are rapidly being plugged and abandoned.

Added vigor was given to the development of the eastern Illinois fields on February 6, 1906, when D. T. Finley, of Pittsburgh, drilled a well on the J. W. Shire farm in the northwest quarter of section 15, Oblong township, Crawford county. The oil was obtained at 890 feet, and the initial production was 250 barrels per day. This well opened up the Robinson pool, which is the largest in the oil area and covers, in all, about 110 square miles of productive territory. The oil is found in sands ranging from 750 to 1,000 feet in depth. There is one general sand made up of three or more generally parallel lenses. There are, however, small areas where only two or even one lens are noted.

The year 1907 brought an extension of development in a small isolated pool about three miles to the southeast of the large Robinson pool. The new pool was known first as the Honey Creek district and originally covered but six or seven square miles. It has later been associated with the Flat Rock district to the east and the two are now joined, so as to comprise about 25 square miles of area. To the north of the Flat Rock area the small Duncanville pool was developed. The area covered is between two and three square miles. The oil is from about the same horizon as that of the Honey creek, Flat Rock, and Robinson sands but has a much lower gravity. It is used almost exclusively for fuel.

The Lawrence county field began to be developed actively in 1907-1908. It has been the most promising, in that seven sands are attracting the attention of operators. The sands occur between depths of 800 and 1,900 feet and are known as follows:

- 1, 2 and 3. Bridgeport, upper lens, middle lens and lower lens.
4. Buchanan.
5. Kirkwood.
6. Tracey.
7. McClosky.

Within this area, which covers about 40 square miles, there has been developed a larger per cent of big wells than in all other pools in Illinois combined.

After the Clark county fields was brought in miscellaneous drilling was stimulated throughout the State. A second attempt was made to discover oil in the vicinity of Sparta, Ill. by J. J. Hoblitzell & Son, who began drilling in 1906. As a result of this work, two or three wells that produced oil in small quantity were completed in the following year. In 1908 a total of sixteen wells had been drilled, but of these only six or seven yielded oil. The amounts were small, except in the case of two wells, one on the Foster farm that yielded about twenty barrels of oil per day, and one on the McIlroy farm that had an initial production of about 100 barrels. All the wells have since declined and the field is now abandoned.

In 1906 an attempt was made to locate oil at Tolono in Champaign county. The drilling revealed oil, but only in slight quantity. Apparently it was the intention to prospect the LaSalle anticline which gives rise to the production area to the southeast.

Early in the year 1908, oil was reported as seeping through a fault into a coal mine near Centralia, Marion county. The attention of oil operators was excited and several shallow wells were drilled. These yielded small amounts of oil, but were of slight commercial value. Wild-cattling was prompted in the winter of 1909 in the vicinity of Sandoval, five miles north of the Centralia shallow wells. Late in March, a deep well, which yielded about thirty barrels per day, was completed upon the Stein farm, one mile north of Sandoval. A second well was finished in July on the Benoist farm, adjoining the Stein land. This well proved to be a valuable producer of both oil and gas. Its success stimulated wholesale leasing and drilling in all directions in Marion county, with the result that a small, but rich, isolated, field of about three-fourths of a square mile was defined. This field is still credited with a good production.

A new gas area was opened in 1909 near Carlinville, Macoupin county, by the Impromptu Exploration Company. Several wells have been drilled south of the town. The gas comes from a sandstone, probably the Pottsville, immediately above the Mississippian limestones. So far, two wells have produced about six barrels of oil per day. The pressures of gas are not large enough to warrant an extended development for commercial purposes.

A small gas area, similar to that of Carlinville, was also opened in the spring of 1910 several miles east of Jacksonville, Ill. The wells were small in quantity. Late in 1911 two other small oil wells were added to the field.

In April of 1911 wild-catting developed an oil field about three miles northwest of Carlyle, Ill., which has since been defined within an area of about 1½ square miles. The governing structure of the field seems to be an elongated dome interrupting the gentle trend of the broad western flank of the Illinois basin. The initial production of the first wells was excellent and caused a rush to the territory. High bonuses were paid for leases many miles from proven territory which later proved barren. The area was suggested as promising by the State Geological Survey previous to exploitation.<sup>1</sup>

Various other attempts have been made to find oil at widely separated points. Small amounts of oil or gas have been observed in such localities as Mascoutah, Marissa, Waverly, Greenville, Decatur, Iola, Eldorado, Old Ripley, Patton, Bartelso, Ridgeway, Campbell's Hill, and Denny. Barren wells have been put down at Herrick, Cobden, the American bottoms east of St. Louis, Trenton, Aviston, Iuka, Olney, Sunner, Albion, Carmi, Duquoin, Pinckneyville, Coulterville, Vandalia, Marshall, Thomasboro, Grafton, Jerseyville, Kane, Richview, Nashville, Omaha, Waterloo, Hansen, Pocahontas, and at a number of other places.

## ORIGIN AND ACCUMULATION OF OIL.

### ORIGIN OF OIL.

The origin of oil and gas has been a puzzling problem for many years, especially since petroleum has come into world-wide use. Chemists and geologists have attacked the problem from their respective points of view and have presented plausible theories, none of which, however, have explained satisfactorily the broad distribution of petroleum in all kinds of sedimentary rocks of various ages.

The chemist has produced many of the component parts of petroleum in the laboratory; he has broken down certain substances into constituents, some of which have properties resembling those of crude petroleum; and he even reproduced certain isometric forms of hydrocarbons peculiar to petroleum—yet the theories arising from these results fail to meet certain geological conditions that prohibit their acceptance.

Geologists have met the problem from a different point of view. Some, on the one hand, have considered the conditions of deposition of sedimentary rocks and have concluded that oil and gas originate from animal and plant life buried in the sediments. Others have conjectured on the internal conditions of the earth during its stages of cooling and settling and have concluded that oil originated from mineral substances. This attitude is closely allied to the chemist's point of view. The geologist's views are not wholly acceptable and hence the origin of petroleum remains uncertain. The whole problem has resolved itself into two general theories styled the *inorganic* and the *organic*.

### THE INORGANIC THEORY.

The inorganic theory was promoted by the discovery that the carbides of certain metals may be broken up into hydrocarbons by the action of water and that alkaline metals produce hydrocarbons if brought into con-

<sup>1</sup> Blatchley, R. S., Ill. State Geol. Survey, Bull. No. 16, pp. 87 and 167.

tact with water saturated with carbon dioxide gas. It was claimed that volcanoes, geysers, and hot springs indicate heat within the interior of the earth sufficient to have formed carbides; and that these were broken up by percolating waters into migrating gases. The presence of hydrocarbons in volcanic gases may thus be explained. Such migrating gases on passing from hot formations to higher, cooler, strata would naturally be condensed into petroleum.

It is claimed that granitic rocks are full of joint planes and other minute cracks, and thus it is impossible for the gas and oil to remain in them because of the ease with which they travel and diffuse. When the shales are reached the oil "simplifies" itself or, in other terms, it leaves more or less of its more viscuous constituents behind. It is claimed that the oil of various American fields, with exception of those like the California and Texas fields, has migrated from a distance to the localities in which they now are found. The fact that all oil fields are confined to sedimentary strata and that below the oil-bearing horizons there frequently are unproductive strata of the same nature makes it difficult to understand how the inorganic theory can apply to our larger fields. It is difficult to understand how the oil of such fields as those of Pennsylvania and Illinois can have migrated long distances and not left traces of travel in the intervening rocks. It is apparent that the inorganic theory of the origin of oil and gas is open to many criticisms. The theories derived from chemical reactions are ingenious, and, no doubt, may explain the origin of some petroleum; they do not, however apply to the conditions of our many oil fields as readily as the organic theories.

#### THE ORGANIC THEORY.

The organic theory advocates that oil and gas originate from the decomposition of vegetable or animal matter, which may have occurred in the bed which now yields oil or gas, or in adjoining beds from which they have migrated.

Chemists have shown that when the body of an animal or a plant is distilled in a closed retort or is allowed to undergo decay in the absence of air, certain gaseous or liquid products are obtained, which resemble petroleum and natural gas. Much the same results are obtained by bacteriological putrefaction of organic matter, without aid of heat. Natural decomposition of animal and vegetable matter in the sedimentary rocks through the periods of geologic time is thought to explain the origin of petroleum.

Shale is held to be the source of petroleum by some supporters of the organic theory. All shale beds are of sedimentary origin and are composed of fine particles of clay. The clay is inorganic and was deposited in water with plants and marine animal life. This decomposition was varied by the deposition of sand, and limey material. The completed stratified rocks comprise a succession of sandstone and limestone, interlain with shale beds. In some fields, as California, diatoms embedded in shale are regarded as the source of the oil. Elsewhere vegetable remains, even of delicate type, like algae, render the enclosing shale highly bituminous and oily. It is thought that all stratified beds contained water

in some degree and that the shales, because of their compactness, had less water than the sands. The presence of water in the formations may have aided in the later migration of the oil from the shales to the sands, by providing a ready medium through which the oil could rise under the influence of gravity to the highest possible position in the sand strata. The shale and sand oils are usually classified as "sweet" oils in contradistinction to the natural petroleums of the limestone beds.

The limestone theory of the origin of oil differs from the last by supposing that marine animal life, peculiar to limestone formations was the source of oil in the sedimentary rocks. The limestone oils of Ohio, Indiana, and parts of Illinois are often known as "sour" oils, because their sulphur and nitrogen content is greater than that of oils found in sand formations. They have a ranker odor than other oils and are often much lighter in color; in fact, they are sometimes designated as "green" oils.

The oil of the Mississippian formations or the Tracey and McClosky sands have undoubtedly originated from marine animals, because the producing zones are highly calcareous sands or oolitic limestones and the oil contains much sulphur. Some of the oil from the upper Pennsylvanian beds in Clark county is sour and comes from calcareous sandstones.

Of the two organic theories of the origin of oil, the shale theory is the more applicable to the pools in the Pennsylvanian or "Coal Measures" sands of the Illinois fields, since the sands seem to bear few or no fossils and are consequently barren in animal organic remains. There was, however, undoubtedly a great abundance of plant life in the waters of the basin of southern and central Illinois. The aquatic plants were algae and various types of sea weeds. In addition to these, land plants were washed down by streams and also marsh plants, such as ferns, ground-pine, etc. Plants from both sources were deposited in the muds and silts of the accumulating deposits of centuries. These, with possibly some marine life, were shut off from the oxygen of the air and other destructive agents and were trapped within the shale deposits, where eventually, through the lapse of geologic time a peculiar, slow, distillation took place, wherein the protoplasm, cellulose, and other constituents of the once living matter, were converted into oils and gases. The distillation and migration were probably a matter of ages. Natural gas is the volatilized, lighter portion of the oil which originated according to the process mentioned. The difference of gravity between gas, oil, and water caused the two former substances to seek the highest places in the rock strata. The presence of natural gas in any area is generally accompanied by oil at some point along the structure in which accumulation has taken place.

## CIRCULATION AND ACCUMULATION OF OIL.

### GENERAL CONSIDERATION.

A problem of special importance is the circulation of oil from its source and its mode of accumulation in porous rocks. The matter is being investigated by laboratory methods by various scientists. The cir-



culatation is accomplished by capillarity, gravity, and gas or rock pressure. The accumulation of oil requires a porous reservoir with an impervious cover or roof. Certain features of geologic structure and conditions of water saturation are important factors in determining the localities at which the accumulation takes place. The circulation must also be affected by the physical properties and relations of the oil and salt water, and the rocks in which they occur. One of the potent forces in directing the circulation is doubtless capillarity, since both the shales and the sands are porous formations.

Capillary action is the physical phenomenon consequent upon the attraction or repulsion of liquids along the sides of very fine passages.

If a liquid of low specific gravity is brought into contact with a very fine hair-like tube it will seemingly pull itself along the passages; while a liquid of high specific gravity, such as mercury, will exhibit the reverse tendency. Capillary attraction is accompanied by concave liquid surfaces and capillary repulsion by convex liquid surfaces. Prof. A. W. Duff, of the Worcester Polytechnic Institute of Massachusetts, discusses the effect of capillary repulsion and attraction as follows: "When the effect (of capillary action) is a depression (mercury), the depressed surface is curved downward and the tension in the surface provides a pressure. When the effect is an elevation, the stretch on the upward curved surface tends to draw the liquid in the surface layer away from the liquid below and so produces a state of tension or diminution of pressure below the surface." If a difference of capillarity exists between water and oil in small tubes, the different elevations to which they are raised will be dependent upon the differences in their surface tensions and specific gravities, and the size of the tubes.

Shales and sandstones are porous formations containing infinite numbers of minute spaces capable of holding liquid. The spaces or pores may be likened to capillary tubes and may be assumed under proper conditions to promote capillary action. William Forstner<sup>1</sup> has the following to say of the classification of sand interstices: "The interstices can be divided into three classes: openings larger than those of capillary size, capillary openings, and openings smaller than those of capillary size, sub-capillary openings. Supercapillarity openings are found in bedding and joint planes, in coarse sandstones, and in conglomerates. In these openings the flow of liquids is controlled by the ordinary laws of hydrokinetics, modified by the viscosity of the fluid, and the regularity, size, and length of the openings. Capillary openings include the great majority of the interstices between the grains of sands and sandstones, many of those in conglomerates, and many of the openings caused by fracture. In these openings the velocity of flow depends upon the area and cross-section of the opening, its length, and the viscosity of the fluid. The movement is so slow that the friction of the moving fluid over the sedimentary film is very small, especially in long openings. Sub-capillary openings include part of the interstices in coarser sediments having capillary openings and nearly all the interstices between the grains of clays, shales, and slates. The movement of the fluid in these openings is excessively slow, under the hydrostatic pressures generally occurring

<sup>1</sup> Forstner, William, *The Occurrence of Oil and Gas in the South Midway Field, Kern County, California*. *Economic Geol.*, Vol. VI, 1911, p. 140.

in these strata the movement will be reduced to such an extent, that the fluid may be considered as [existing in] fixed films held by molecular attraction."

Capillarity was perhaps effective upon the included water of shales long before the distillation of oil began in them, and may have caused the expulsion of water into the sands. The action extended to the oil which began to originate and find its way into the pores of the shale. Its production was exceedingly minute, yet it was acted upon by capillarity, and caused to ascend toward the sand. The relation of specific gravity of oil and water caused the oil to rise to the top of the water in the sandstones. It is assumed that this action continued as long as distillation took place, until eventually the oil had left the shales to a large degree and had accumulated in the sandstones. The action may have been further aided by various compressions of the formations and other unknown physical phenomena until the shales had given up most of their oil to adjoining porous sandstones.

It is probable that the gaseous hydrocarbons and petroleums of various specific gravities were not separated until the more porous beds were reached. Under the stress of earth movements and different degrees of heat and pressure, changes in the composition of the petroleums must have occurred. Again the oil may have been affected chemically by water in the sandstones and altered from its original condition.

It is apparent that the distribution of petroleum is greatly influenced by the presence of water and it is a fact that there is abundant water in the Illinois oil sands. Oil is lighter than water. If both are present the oil rests upon the surface of the water and is to that extent controlled by the latter. If oil and water are not associated, the petroleum moves downward along bedding planes and through coarse, porous strata under force of gravity. In such a case it may occur in pores at the bottom of a syncline.

A third theoretical agent of the circulation of oil from its source of distillation to its present position is perhaps that of gas pressure or "rock pressure." This pressure is always noticeable when a new oil or gas area is opened up. The oil generally rises far up into the casing of the new well and often above its mouth. If gas is present and the casing is closed so that the product cannot escape into the air, a pressure is developed inside the pipe. The gas may accumulate instantly and thus indicate a very porous reservoir beneath, or it may take considerable time to gather and thus show a less porous one. The two conditions have often occurred in the same locality and yet the same pressures were eventually secured. It is thought that gas pressure may help to promote movement of oil through the containing rocks.

New lines of investigation have been carried on recently by Dr. D. T. Day, J. Elliot Gilpin, and Oscar E. Bramsky of the United States Geological Survey in an effort to find the cause of the differences between such oils as those of Pennsylvania and Illinois and those of Ohio and Indiana, or rather the Trenton limestone oils.<sup>1</sup> The question reverts to the cause of the difference between "sweet" and "sour" oils, assuming that all petroleum, no matter what its source is, is a definite substance;

<sup>1</sup> Gilpin, J. Elliott, and Bramsky, Oscar E., The Diffusion of Crude Petroleum through Fuller's Earth, Bull. U. S. Geol. Survey No. 475, 1911.

the product of one field differing from another only in the proportion of its series and members of hydrocarbons. The Pennsylvanian and Illinois "sweet" oils are found to contain a larger proportion of paraffin hydrocarbons and less benzine, unsaturated hydrocarbons, sulphur and nitrogen than the Ohio and some California oils. It is concluded that the first mentioned oils were migratory, because the sands in which they are found bear little evidence of containing a source for the petroleum, while the oils of Ohio and perhaps the McClosky oil of the Illinois fields are thought to have originated in the limestone beds in which they are found. If such is the case and petroleum is everywhere the same substance except for the lack of certain hydrocarbons, the difference in the two grades of oil must be the result of migration through filtrating materials, or, in other words, of a "selective activity" of shale or clay. It may be true that some of the Pennsylvania and Illinois oils now reposing in sands were originally of animal origin and they have lost some of their original ingredients by migration. These conclusions led to experiments upon the diffusion of petroleum through Fuller's earth, which is a good type of shale for purposes of investigation. It was found by Day that oil such as the Illinois oil could be produced by this method from crude Trenton limestone oil. Glass tubes packed with dry Fuller's earth were placed in vessels containing crude Illinois oil. The oil, in the course of some time, began to move upward in the tubes by force of capillarity. Examination of the tubes at the conclusion of the migration showed that light oils were found at the top, and low grade, heavy oils, sulphur, and other heavy constituents at the bottom of the tube. Continued filtrations of the oil removed the sulphur compounds entirely.

It was concluded from these experiments, "that the Illinois oil at some time in its history diffused through porous media, which exercised a selective action upon it, removing a large part of the unsaturated and sulphur compounds and probably the benzine and nitrogen compounds."

#### THE POROUS STRATUM.

Petroleum was valueless as a commercial product when it was originally formed, because its diffusion was so complete that a bore into the containing rock could scarcely have obtained a showing of oil. Its accumulation in pools of commercial value first demands more porous beds than the shales in which it is supposed to have originated. The strata of sand interlain with the shales are suitable reservoirs because in most cases they are much more porous than the compact shales. Exceptionally, the sands themselves contain portions which are extremely compact and impervious. These non-porous areas may act as retaining covers and effect the concentration of underlying oil where structure is favorable. They may be extensive enough to separate adjoining pools, or they may be small enough in extent to cause mere local "dry spots" in the midst of very productive territory, in which the sands are otherwise highly porous. The presence of small streaks of shale within the sandstones is frequent in Illinois formations. Often two or three averaging 5 to 15 feet in thickness may occur in a thickness of 50 to 80 feet of sand. The driller terms these "breaks." The sand and the



"break" merge into one another in most cases and oil is not often found where sand and shale are thus mixed.

#### IMPERVIOUS COVER.

An important requirement for the accumulation of oil and gas is an impervious cover, or retaining roof, which will hold the oil and gas captive in the porous stratum. In Illinois there is almost invariably a cover of hard, compact, shale over the oil sands. This is particularly true of the sands in the Pennsylvanian formations. The producing sands in the Mississippian formations are overlain in some instances by limestone. The impervious covers have doubtless caused the retention of the oil in the sands during the periods of earth movements which caused structural folds in the rock. If an oil pool did not have an impervious cover between it and the surface, the lighter portions of the oil would long-since have volatilized and passed off as natural gas, while only the heavy oil or asphalt-like residue would remain. Where a thin cover lies over a productive oil sand some of the lighter portions of the petroleum have escaped and heavy, lubricating oil is generally found. This is of low gravity and consequently of low grade, and generally serves as fuel oil. The abundance of shales within the "Coal Measures" and the upper Mississippian rocks of Illinois have prevented an extensive volatilization and consequently the oils are of good grade, averaging about 33° in gravity.

#### GEOLOGICAL STRUCTURES.

Another very important necessity for the accumulation of oil and gas in pools is the presence of certain types of structural features in the rocks. The sedimentary strata were deposited under water horizontally, or practically so, and the natural distillation of oil probably took place primarily while the beds were in that position. Subsequent disturbances took place causing the strata to be folded, forming as it were, arches, or domes, in some places, and corresponding troughs or basins in others. The arches are known as anticlines while the troughs are called synclines. When these undulations took place, the water, petroleum, and gas within the sand formations were forced to move and distribute themselves according to the laws of gravitation and hence according to their specific gravities. The water was the heaviest of the three fluids, and, therefore, sought the synclines as far as possible, depending, of course, upon the porosity of the sands. Its tendency was to displace the oil and gas, forcing the oil to float on the water and the gas to rise still higher. The oil was enabled to rise as far as the water extended up the slopes of the syncline, while the gas was able to free itself from the fluids and rise to the highest place in the porous bed, usually the crests of the anticlines.

The earth disturbances effecting the changes in the positions of the strata may be responsible also for minor irregularities which occur on the anticlines and synclines themselves. The surface of an oil sand on the anticline may be pitted or undulating. This condition may affect an extensive area or only a few acres of ground. The general accumulation of oil and gas is governed by the anticline proper, covering many miles, and the segregation of pools may possibly be caused by smaller folds on

the large one. Coupled with this intricate system of synclines and arches on the parent fold, there is variation in the porosity of the sands; the two conditions greatly affect the distribution of oil and gas. It is readily recognized that either factor may, locally, explain the presence of dry holes within productive territory. Some question has arisen as to whether these minor arches are true anticlinals of deformational character or whether they represent merely original thickening and thinning of particular beds or, again, whether they result from unequal settling during the consolidation of the sediments. Locally, any or all of these factors may account for the conditions.

Another important type of geologic structure in which an accumulation often occurs, is the "terrace" or flattened area upon the flanks of a syncline or anticline. The terrace, strictly speaking, is an interruption in the uniform dip of the sides of a basin, where the rocks are approximately horizontal. Such terraces are to be found upon the sides of the great structural basin in southern and central Illinois. A segregation of oil takes place upon a favorable terrace much in the same manner as in the anticlines and the synclines. The water of the basin enables the oil to rise to the terrace, where it may be trapped by friction. But the oil, originally in the sloping sand above the terrace, may migrate farther up the general incline so as to float on the water surface. The gas follows its usual course in freeing itself from the oil and accumulates in the terrace head or continues up the general dip to the adjacent anticline or to some impervious barrier.

Frederick G. Clapp has classified oil pools according to their geological structure, because all known fields have shown their accumulations to be due primarily to definite structures. His classification is as follows:<sup>1</sup>

1. When anticlinal and synclinal structure exists.
  - Strong anticlines standing alone.
  - Well defined alternating anticlines and synclines.
  - Monoclines with change in rate of dip.
  - Structural terraces.
  - Broad geanticlinal folds.
2. Quaquaversal structures.
  - Anticlinal-bulge type.
  - Saline dome type.
  - Volcanic neck type.
3. Along sealed faults.
4. Oil and gas sealed in by asphaltic deposits.
5. Contact of sedimentary and crystalline rocks.
6. In joint cracks of sedimentary rocks.
7. In crystalline rocks.

Investigations of the main fields in Lawrence county, Illinois, reveals an additional member to Clapp's arrangement. This is a double plunging anticline or a combination of a strong anticline standing alone and a dome or quaquaversal structure. This may fall under Class I or it may necessitate subdivision of Class 2 as follows:

2. Quaquaversal structures.
  - (a) Anticlinal-bulge type.
  - (b) Saline dome type.
  - (c) Double-plunging anticline type.
  - (d) Volcanic neck type.

<sup>1</sup> Clapp, Frederick G., The Occurrence of Oil and Gas Deposits Associated with Quaquaversal Structure. *Economic Geology*, Vol. VII, No. 4, 1911, p. 364-381.

## WATER SATURATION.

One of the most important factors, if not the greatest, in the concentration of oil in raised structures, is the presence or absence of water in the oil-bearing stratum. Mr. W. T. Griswold offers some very interesting observations upon this subject with reference to the Appalachian region.<sup>1</sup> The theories are more or less applicable to the Illinois rocks, inasmuch as they are of similar age and character. His conclusions are as follows:

"In *dry* rocks the principal points of accumulation of oil will be at or near the bottom of the syncline or at the lowest point of the porous medium, or at any point where the slope of the rock is not sufficient to overcome the friction, such as structural terraces or benches. In porous rocks, *completely saturated*, the accumulation of both oil and gas will be in the anticlines or along level portions of the structure. Where the area of porous rocks is limited, the accumulation will occur at the highest point of the porous stratum; and where areas of impervious rocks exist in a generally porous stratum the accumulation will take place below such impervious stop, which is really the top limit of the porous rock. In porous rocks that are only *partly filled* with water the oil accumulates at the upper limit of the saturated area. This limit of saturation traces a level line around the sides of each structural basin, but the height of this line may vary greatly in adjacent basins and in different sands of the same basin.

"Partial saturation is the condition most generally found, in which case accumulations of oil may occur anywhere with reference to the geologic structure. It is most likely, however, to occur upon terraces or levels, as these places are favorable to accumulation in both dry and saturated rocks.

"Under all conditions the most probable locations for the accumulation of gas are on the crests of anticlines. Small folds along the side of a syncline may hold a supply of gas, or the rocks may be so dense that gas may not travel to the anticline, but will remain in volume close to the oil."

The above observations were found applicable in the Illinois oil fields, as described under the relations of structure to salt water, oil and gas. The Illinois wild-cat areas have not offered sufficient data as to water saturation to warrant conclusions with reference to it. It is hoped that in the future the operators in Illinois will note with as much exactness as possible the wet condition of the sands they encounter. It will then be possible for the geologist or engineer to offer better suggestions as to the probable conditions in prospective oil areas.

## GENERAL GEOLOGY OF ILLINOIS RELATING TO OIL AND GAS.

## INTRODUCTION.

In order that the reader may have a general view of the oil and gas conditions of the State, a brief elementary review of its geology is presented.

<sup>1</sup> Griswold, W. T. and Munn, M. J., Geology of Oil and Gas Fields in Steubenville, Burgettstown and Claysville Quadrangles, Ohio, West Virginia and Pennsylvania. Bull. U. S. Geol. Survey No. 318, 1907, p. 15.

Those who have observed the ledges exposed at quarries or in the banks of streams appreciate that the rocks occur in rather definite layers of varying thickness. Well drillers, especially, realize that sandstone, shale, limestone and combinations of these rocks underlie the State as alternating strata of considerable regularity. The study of these relations constitutes stratigraphic geology or *stratigraphy*.

A rock stratum may underlie a large or a small area. Thus, a coal bed or an oil sandstone, or "*sand*," may be present in one locality but absent in the adjoining region. The *areal* extent of oil sands therefore is a matter of importance to operators.

The rock layers exposed to view appear to be flat-lying or horizontal. Detailed study may show gentle pitching or *dipping* of the strata. Thus, a sandstone may lie 300 feet below sea level in a particular area, but dip so as to be 500 feet below sea level in an adjoining county. Exceptionally, the rocks lie in gentle folds. The attitude or "lie" of the strata constitutes, broadly, their "*structure*;" and the determination of this is of utmost importance in the discovery and development of an oil field.

The geology of the State is described elsewhere<sup>1</sup> in a more detailed manner; it will be sufficient in this report to discuss its significant features, briefly, under the headings just mentioned.

### STRATIGRAPHY.

The accompanying sections indicating the order and character of the strata were first published by Bain<sup>2</sup> in 1907. They are modified by the writer to agree with later data and conclusions.

Overlying the consolidated rocks of the State except in the extreme southern and the northwestern counties, there is a varying thickness of glacial deposits or "*drift*." These clays, sands, gravels, etc., are commonly encountered in drilling before hard rock is reached. Locally, they contain gas and Bain says:

"Natural gas is found in these deposits in small quantity at a number of points throughout the State. Such wells are, or have been, known near Champaign, Princeton, Colchester, Wapella, Heyworth, and elsewhere. The pressure is usually slight and the life of the individual wells is usually short. While it is not possible in every case to absolutely exclude the possibility of these wells representing leakage from lower reservoirs, a sufficient explanation of them is believed to be found in the decay of woody material buried in the drift itself. These wells are characteristically difficult to maintain owing to sand clogging the pipes."

The section for southern Illinois is most important in the present study. The formations yielding oil and gas production are indicated by italic and occur chiefly in the Carboniferous system. Possible oil "sands" are suggested also in the Ordovician and Silurian systems, especially in central and northern Illinois.

<sup>1</sup> Weller, Stuart, The Geological Map of Illinois: Bull. Ill. State Geol. Survey No. 6, 1907.

<sup>2</sup> Bain, H. Foster, Petroleum Fields in Illinois in 1907: Bull. Ill. State Geol. Survey No. 8, pp. 273-312.

*Northern Illinois section.*

This section is intended to be representative for that portion of the State lying north of Rock Island, LaSalle, and Kankakee.

Pennsylvanian.	{	McLeansboro. Limestones and nodular calcareous shales in upper part and sandstone at the base. Thickness 300 feet.
		Carbondale. Coal, shale, sandstone and limestone. Thickness 200 feet.
		Pottsville. Shale. Thickness 2 to 20 feet.
		Unconformity.
Devonian.....	{	Limestone. Thickness 125 feet.
		Unconformity.
Silurian.....	{	Niagara. Dolomite. Thickness 20 to 400 feet. <i>Contains frequent seepages of bitumen in the vicinity of Chicago.</i>
		Unconformity.
Ordovician.....	{	Cincinnatian (Maquoketa). Shales and limestone. Thickness 50 to 225 feet.
		Unconformity.
		Galena-Trenton. Mainly dolomite; a little limestone and shale at the base. Thickness 230 to 450 feet. <i>A very persistent "oil" rock or petroliferous shale in the lower portion.</i>
		St. Peter. Sandstone, friable. Thickness 100 to 220 feet. Heavily water-bearing.
		Lower Magnesian. Dolomitic limestone. Penetrated to 845 feet. All but upper part known from well records; rests on Potsdam sandstone, known only from well records.

*Central Illinois section.*

For the region south of Rock Island, LaSalle, and Kankakee, and north of the Missouri river and Marshall, Clark county.

Pennsylvanian.	{	McLeansboro. Shales, sandstones, thin limestones and coals. Rocks between top of Herrin (No. 6) coal and bed rock. Thickness 125 to 700 feet.
		Carbondale. Coals, shales and sandstones. Rocks between the base of the Murphysboro (No. 2) coal and the top of the Herrin Coal. Thickness 100 to 300 feet.
		Pottsville. Sandstones, thin shales and coals. Thickness 150 to 200 feet. <i>Carlinville oil-sand, Macoupin county; small amounts of oil and gas reported but position not certain.</i>
		Unconformity.
Mississippian...	{	Birdsville and Tribune (Chester). Irregular thickness of sandstone, shale and limestone, recognized in a few borings; generally absent in this territory. Thickness 0 to 50 feet.
		St. Genevieve, St. Louis, and Salem. Limestone, non-magnesian, partly cherty and partly oolitic. Thickness 225 to 400 feet.
		Osage (Burlington, Keokuk and Warsaw). Shales and limestone, the latter often cherty. Thickness 100 to 400 feet. <i>Crude petroleum in geodes near top of the Keokuk.</i>
		Kinderhook. Shales, limestones, and sandstones. Thickness 40 to 120 feet.
Devonian.....	{	Unconformity.
		Upper Devonian. Shale. Thickness 0 to 130 feet.
		Hamilton. Limestones. Thickness 0 to 100 feet.
Silurian.....	{	Unconformity.
		Niagara. Dolomite. Thickness 50 to 150 feet. <i>Gas at Pittsfield, Pike county and oil seepage in Calhoun county.</i>
Ordovician...	{	Cincinnatian (Maquoketa). Shales. Thickness 40 to 200 feet.
		Unconformity.
		Galena-Trenton. Dolomite. Thickness 200 to 400 feet. <i>Oil seepage in Calhoun county.</i>
		St. Peter. Sandstone. Thickness 120 to 170 feet. Lower Magnesian. Dolomitic limestone. Penetrated to 700 feet.

*Southern Illinois section.*

For the area lying south of a line drawn eastward from the mouth of the Missouri river to Marshall, Illinois, and the State line.

Quaternary....	{	Glacial till, sand, and gravel; loess and alluvium. Present as surface rocks everywhere except in northwest and extreme south. Thickness, 30 to 225+ feet.
Tertiary.....	{	Lafayette, LaGrange and Porters Creek. Clays, sands, gravel, and ferruginous conglomerate. Occurs only in extreme south. Thickness 250 feet.
Cretaceous....	{	Ripley. Clay and sand. Occurs only in extreme south. Thickness 20 to 40 feet.

*Southern Illinois Section—Concluded.*

Pennsylvanian.	McLeansboro formation. Shales, sandstones, thin limestones and coals. Rocks between top of Herrin (No. 6) coal, and bed rock. Thickness 500 to 1,000 feet. <i>Contains the oil and gas sands of the Westfield, Siggins and Casey pools.</i>
	Carbondale formation. Coals, shales and sandstones. Rocks between the base of Murphysboro (No. 2) coal and the top of the Herrin coal. Thickness about 375 feet. <i>Lower "pay," Johnson township pool, Clark county.</i>
	Pottsville formation. Sandstone, some thin shales and coals. Thickness 300 to 700 feet. <i>Includes the Buchanan sand (base), and Bridgeport sand (top), Lawrence county; Robinson sand (top), Crawford county; oil sand of Litchfield, Montgomery county; probably the Princeton, Ind., oil sand.</i>
Mississippian ..	Unconformity.
	Birdsville and Tribune (Chester). Sandstones, shale, and limestones; usually six limestones with three well defined beds (non-cherty) and generally with red shale at the base. Thickness 770 feet. <i>"Gas" and Kirkwood sands, Lawrence county; gas sand, Vincennes, Ind.; Sparta sand, Randolph county; Stein and Benoist sands, Marion county (the latter is the equivalent of the Kirkwood sand); Lindley gas sand, Bond county; Carlyle sand, Clinton county and the Oakland City sand, Pike county, Ind. Tracey sand, Lawrence county and probably Denny sand, Perry county (show of oil).</i>
	Cypress. Sandstone, massive, coarse-grained; fairly regular in a thickness of 80 to 150 feet in southwestern Illinois; very irregular and usually thin in southeastern Illinois. The Cypress sandstone is absent in the oil fields of Lawrence county.
	Unconformity.
	Ste. Genevieve. Limestone, mostly oolitic and very cross-bedded. Thickness, 80 to 100 feet. <i>McClosky sand, Lawrence county.</i>
	St. Louis and Salem (Spergen). Limestone, dense becoming oolitic in lower division. Thickness 320 feet. <i>Show of oil reported at base in the Lawrence county pool near Bridgeport.</i>
	Osage (Burlington, Keokuk and Warsaw). Shale above and coarse-grained limestone with chert below. Thickness 440 feet.
Devonian .....	Kinderhook. Shale and shaly limestone, red. Thickness 60 feet.
	Upper Devonian (Sweetland Creek). Shale. Thickness 50 to 60 feet.
	Hamilton. Limestone. Thickness about 100 feet.
	Onondaga (Grand Tower). Limestone. Thickness 155 feet.
	Oriskany (Clear Creek). Chert and limestone. Thickness 200 to 240 feet.
Silurian .....	Helderberg (New Scotland). Limestone. Thickness 165 feet.
	Alexandrian (Sexton Creek, Edgewood and Girardeau). Limestone, some shale. Thickness 116 feet.
Ordovician ....	Richmond (Cincinnati). Orchard Creek, shale, Thebes sandstone, Fernvale limestone. Thickness about 100 feet.
	Galena-Kimmswick. Non-dolomitic limestone. Thickness 510 feet recorded.
	St. Peter. Sandstone. 120 feet recorded.
	Lower Magnesian. Mostly dolomitic limestone with occasional thin layers of sand and shale. 545 feet recorded.

## AREAL EXTENT OF THE FORMATIONS AND OIL SANDS.

The extent of the main geologic systems in Illinois is suggested by the map already published.<sup>1</sup> Of particular interest here is the extent of the formations which are, or may be, productive of oil and gas. Passing from the youngest to the oldest or lowest rocks, by far the most important are the Pennsylvanian and Mississippian formations; although the Silurian and Ordovician rocks deserve brief mention. The Carboniferous include the Pennsylvanian ("Coal Measures") series and the underlying Mississippian.

The Pennsylvanian rocks occupy 42,000 square miles in the heart of Illinois. They are absent from that part of the State lying north of an irregular line drawn eastward from Rock Island. The boundary swings southward from near the mouth of Kankakee river to a point west of Paxton, thence northeast to the State line near Watseka. South of this line the Pennsylvanian rocks continue from Illinois into Indiana and Kentucky. The southern and western margins of the area follow the trend of the Ohio and the Mississippi at a distance of 10 to 25 miles. The Pennsylvanian rocks of the southern area are thickest and most

<sup>1</sup> Loc. cit.



complete. They are thinner in the central section, chiefly because of the thinning away of the Pottsville formations with their included oil sands. North and northwest of Springfield these rocks are essentially absent but they are present eastward from Decatur. A thin layer occurs also in the vicinity of Rock Island. The lowest beds of the Pennsylvanian are lacking along the western boundary of the State from Randolph county northward to Rock Island. It thus appears that the oil sands of the Pottsville are most promising in the central and southeastern parts of the State. Even there, the Pottsville may be limited to areas from which the upper Chester formations have been eroded. The higher sands may be found present practically anywhere except at the thin edge of the Pennsylvanian area. The horizontal extent of the various sands is not known accurately, even within the drilled areas, because of lack of good well records and consequent difficulty of identifying the sands.

The Pennsylvanian rocks above the Pottsville are subdivided into upper and middle parts, the Pottsville constituting the basal portion. The upper part is specifically known as the McLeansboro and the middle part, the Carbondale.

The McLeansboro formation includes all the rocks between the top of the Herrin or No. 6 coal and the top of the Pennsylvanian series. A thin layer of shale usually overlies the Herrin coal followed by a very persistent limestone. The limestone contains a small fossil known as the *Fusulina*, which is about the size of a large grain of wheat. It tapers at both ends and a cross-section has the appearance of concentric circles. Dr. Udden has been able to distinguish fragments of the fossil in a quantity of chopped, or ground, well samples taken from a churn drill hole. A red shale is often found from 40 to 200 feet above the Herrin coal. This red bed has been noted in Peoria county by Dr. Udden; in Fulton, Sangamon, and Clark counties by T. E. Savage; in LaSalle county by Gilbert Cady, and in White, Gallatin, and Saline counties by F. W. DeWolf. It occurs high up in many well records in Crawford and Lawrence counties but low in other sections of the State. The *Fusulina* limestone, red shale, and top of the No. 6 coal are the most important beds in the McLeansboro and the absence of any two of them still leaves a possible means of determination for the base of this division. There are usually 300 feet of shale, clay, some sand, local coal beds, etc., between the *Fusulina* limestone and the Shoal Creek limestone. The maximum thickness of the formation in southeastern Illinois is about 1,000 feet.

The Carbondale includes the rocks from the Murphysboro (No. 2) coal to the top of the Herrin (No. 6) coal. Shale constitutes the major part of the division with much micaceous sandstone in the basal portion. There are several beds of limestone underlying the Herrin coal. The shales are soft and cavy and often very sandy, so closely are they associated with the massive Pottsville sandstones beneath. The sandstones are sometimes coarse above the Murphysboro coal. This coal is often absent and a thin limestone and more often shale, separates the Carbondale and Pottsville. There is a good bed of sand usually under the Herrin coal. The productive oil-sand north of Centralia is thought to correspond to this and therefore lies in the Carbondale. The most important beds of this division are the Herrin coal at the top, the Murphys-

boro coal at the base and the Harrisburg (No. 5) coal between. These coals are widely distributed and give good opportunity of interpreting this division. The formation is about 225 feet thick in the northern part of the coal area of Illinois, and 300 to 450 feet in southern counties.

The Casey sands, or the shallow sands of Clark, Coles, Cumberland, and Edgar counties and the 400-foot sands of the Robinson pool in Crawford county, occur well up in the Pennsylvanian. They are interbedded with coals, thin limestones, and prevailing shales. They have been widely drilled along the LaSalle anticline and have been found productive of oil and some gas. Their shallowness and the ease of drilling through the overlying formations has caused their thorough exploitation. These sands are fairly widespread over the southern and central portions of Illinois but have been found commercially productive in but one other locality beyond the LaSalle fold. The original oil seep in the mine north of Centralia, which gave impetus to the development of the Marion county oil field, is from a sand immediately underlying the Herrin coal. This sand was found productive in several wells north of Centralia. As soon as the position of the Herrin coal is definitely learned in the main oil territory, it will perhaps be possible to identify and correlate this sand.

The Pottsville sands at the base of the Pennsylvanian have been studied in Illinois along their outcrop by David White. From the fossils they are believed to correspond in age to the Pottsville rocks of the Appalachian region. The oil and gas sand of Litchfield apparently belongs in the Pottsville. This is perhaps the only instance in which these formations are productive of oil outside the Buchanan sand of the southeastern Illinois fields. The Pottsville sandstones of the central and southern portions of the State, especially in the deeper part of the Illinois basin and over the LaSalle anticline, are conspicuous for their massiveness. Since they are interbedded with shales, however, the top of the formation is difficult to identify, owing to the merging of the sands with overlying shaley rocks. The correlations in this report were based, for the most part, upon the top of the thick sand immediately underlying the conspicuously shaley rocks. These sands are fairly well saturated with salt water wherever they have been encountered. They commonly lack conspicuous limestone strata, thus differing distinctly from the underlying Mississippian rocks. In the southern part of the State the Pottsville rocks are as much as 700 feet thick.

The Mississippian series lying in the Carboniferous, next below the Pennsylvanian ("Coal Measures") contains important oil sands whose exact extent is not accurately known. The outcrops of the Mississippian rocks occur around the southern and western borders of the State, and exposures show that the full thickness is not everywhere present. The thickest development occurs in the southern area. It wedges out to the north so its edge is overlapped and concealed by the Pennsylvanian rocks. The Mississippian oil sands, as shown by the table, occur in the upper or Chester members. They are the most productive sands and have produced most of the oil from the eastern Illinois fields.

The top of the Chester is not positively recognized in drill records. The correlations in this report were based upon the limestone immediately underlying the massive Pottsville sandstone. It is succeeded by



other limestones interlain with strata of sandstones and red shales. Weller says:<sup>1</sup>

From most of the literature on the subject one gains the impression that the Chester is dominantly a limestone formation, but in working over the area occupied by the beds in the field, one is impressed with the fact that it is in a large part sandstone. Nowhere in that part of Illinois occupied by these beds, is the limestone element in the formation the most conspicuous feature, except along the Mississippi river bluffs above Chester, from that city to the point where the Cypress sandstone outcrop begins. It is probable that where the limestone has its greatest development, not more than one-third of the total thickness is calcareous, and over a large part of the area the thickness of the limestones probably does not exceed one-fifth of the entire thickness.

The best region in which to study the succession of beds in the Chester, is in the Mississippi river bluffs above and below the city of Chester. This section shows an alternation of chiefly calcareous and arenaceous formations, there being three conspicuous limestones and three sandstones. The limestones are frequently interbedded with calcareous shales, and the sandstones frequently become arenaceous shales or at times clay shales.

The lowest member of the "group," above the Cypress sandstone, is a limestone and shale formation attaining a maximum thickness of approximately 250 feet at and above Chester. In its lower portion it includes considerable beds of calcareous and clay shales, a bed of variegated red and blue shale being commonly present near the base. In the upper part of this member is a great limestone ledge about 100 feet in thickness, with occasional thin shaly partings, which furnishes the quarry rock at the Southern Illinois penitentiary, at Menard. The great mass of the fauna of the "Chester group" in Illinois has been described from this lower, calcareous member of the formation as a whole.

The second member of the "group" is a sandstone or shale, the shale being most conspicuous in the more northern part of the area, while to the south it is almost wholly a sandstone similar to the Cypress in character, but usually thinner bedded and not infrequently more or less of an arenaceous shale. This division attains a thickness of about 80 feet. The third is again a limestone which is apparently more impure than most of the beds of the lower division. It is much less fossiliferous than the lower division and the fossils are such as to give it definite faunal characters which can be recognized over wide areas. Its thickness near Chester is about 60 feet. The fourth member is again a sandstone similar to the earlier sandstone beds, and attains a thickness of 65 feet. The fifth member is a limestone similar to limestone No. 2, in lithologic characters, and is usually almost or quite unfossiliferous. Its thickness is about 35 feet.

It seems to be altogether probable that these three limestone beds of the Chester "group" can be differentiated and mapped throughout the faulted area in the southern part of the State, and that by means of them the structure can be worked out in much detail. In the final work upon these beds it will probably be found to be expedient to distinguish each of these six members of the Chester by distinct formation names, just as the Cypress sandstone is now distinguished.

Dr. Weller has kindly furnished the following general section of the Chester rocks from the exposures along the Mississippi bluffs in Randolph and Monroe counties, Illinois:

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<sup>1</sup> Weller, Stuart, The Geological Map of Illinois. Bull. Ill. State Geol. Survey No. 6, 1907.

*General section of the Chester (above the Cypress sandstone).*

Formations.	Thickness in feet.
<b>Birdsville:</b>	
Rockwood sandstone .....	100
Limestone (No. 3) .....	20
Arenaceous shale or shaly sandstone .....	47
Sandstone .....	10
Arenaceous shale or shaly sandstone .....	33
Limestone (No. 2) .....	54
Shale .....	42
Limestone (persistent bed) .....	8
Shale (in some places a bed of sandstone occurs in this shale of variable thickness from 0-20 feet).....	36
Limestone .....	4
Shale .....	4
<b>Tribune:</b>	
Limestone (No. 1), heavy bedded .....	80
Interval of uncertain character, lower part probably shale and upper part limestone .....	30
Limestone (fossils) .....	49
Probably shale—not exposed .....	38
Variegated red and green shales .....	15
Not exposed .....	5
Limestone (fossils) .....	20
Shale, thin streak .....	15
Limestone .....	15
Shale, thin strata .....	25
Unknown .....	25
Cypress sandstone .....	134
Total depth to bottom of Cypress .....	769

The thinning away of the Chester beds to the north causes the absence of important oil and gas sands in that part of the State. No Chester has been found present west of a line from Decatur to O'Fallon. Probably there is little Chester north of a line between Decatur and Springfield.

Pre-Chester sands of the Carboniferous or those below the rocks just described are not present in the main fields. These rocks have been very little prospected elsewhere and are not known to be productive in other sections of the State. Regardless of its close association with the Chester proper, its wide extent and porous character, the Cypress sandstone is not looked upon as holding much promise.

The Chester group is limited to the Tribune formation because of upper and lower erosion periods in which the Birdsville or upper division and the Cypress or lower sandstone member have entirely disappeared.

The Ste. Genevieve limestone underlies the Cypress and is found to be highly productive of oil in Lawrence county. This bed is mostly limestone but conspicuously oolitic and soft, which appears to be a recurrence of the same phase of the lower Salem limestone. Its maximum thickness in the oil fields is 85 feet while Weller gives 100 feet for Monroe county. The McClosky sand corresponds to the Ste. Genevieve. Below that, in the Carboniferous, are no known beds that are either encouraging or discouraging as possible sources of oil. A very recent report, however, describes the finding of oil 300 feet below the top of the St. Louis limestone on the Hardacre farm, N. E.  $\frac{1}{4}$  Sec. 10, T. 3 N., R. 12 W., Lawrence township, Lawrence county. This may indicate an oil horizon at this position in the series. Petroleum has also been found in the geode bed of the Keokuk. This is not believed, however, to be especially significant.

The Silurian includes the Niagara limestone formation, which in northern Illinois is dolomitic, and locally contains bituminous deposits. It offers some slight chance of oil production.

The Ordovician system includes the Galena-Kimmswick limestone, along with others of little importance in this connection. Over it lie the Richmond-Maquoketa shales which, in the northwest counties, are rich in disseminated oil. The Galena-Kimmswick is known to be 300-400 feet thick in the north; 250 feet thick in Calhoun and Jersey counties; at least 100 feet in southern Illinois. It doubtless underlies the younger rocks of the Illinois basin.

### STRUCTURE.

Throughout the central portion of Illinois there is a spoon-shaped basin with its long axis extending from the north line of Stephenson county past LaSalle, Lovington, and continuing to the southwest county of Indiana. The deepest part of the basin lies in the vicinity of Wayne, Hamilton, Edwards, and White counties, where the rocks are comparatively flat. Towards this basin, with local exceptions, all the rocks of Illinois and of western Indiana dip gently. The sides of the "spoon" show some minor longitudinal folds. The most important is the LaSalle anticline (See Plate IB) which runs from Freeport to a point just east of LaSalle, and continues in a southeasterly direction through the oil field and into Indiana. From western Illinois the rocks dip gently eastward until the Duquoin anticline is reached but then dip much more rapidly to the axis. They rise from this line to the LaSalle anticline, decline gently, and then rise again into Indiana. The dips of the southern rocks into the basin are locally 100 feet or more to the mile. The anticlines and other minor irregularities influence the accumulation of oil and gas as explained in a previous discussion, and, therefore, are of special importance. They become less conspicuous towards northern Illinois; consequently that part of the State does not offer as promising structural features, for the accumulation of oil as the southern part and it moreover, entirely lacks the Pennsylvanian and Mississippian oil sands. Oil if present must be found in the older formations.

## STRATIGRAPHY OF CRAWFORD AND LAWRENCE COUNTIES.

### GENERAL STATEMENT.

The stratigraphy of Crawford and Lawrence counties is revealed by the study of two sets of columnar sections comprising the most representative borings in the two counties. Three of the records, 2, 5, and 10 of the Lawrence county and all of the logs of the Crawford county sections are precise studies of well samples collected by the writer and examined by Dr. J. A. Udden.

### CRAWFORD COUNTY.

All the penetrated rocks in the producing areas of Crawford county belong to the Pennsylvanian series. These rocks are overlain by a varying thickness of drift. The Pennsylvanian series are represented by about 480 feet of the McLeansboro, 300 feet of the Carbondale, and about 100 feet of the Pottsville formations. The rocks are all of sedi-

mentary origin being principally shales with variable intergradations of sandstones, limestones and coal. The columnar section of Crawford county is made up of logs from several localities, several of which are outside the area covered by this report. They are plotted in order from south to north in Plate II. The top of the limestone over the Herrin coal, which may be called the "*Fusulina*" limestone for the lack of a geographical name, is used as a key line for the columnar section. All the records are plotted with respect to this line and are presented herewith, corresponding by number to those printed on Plate II. All of the following logs were compiled by Dr. J. A. Udden from a detailed examination of well samples saved by the Ohio Oil Company.

LOGS.

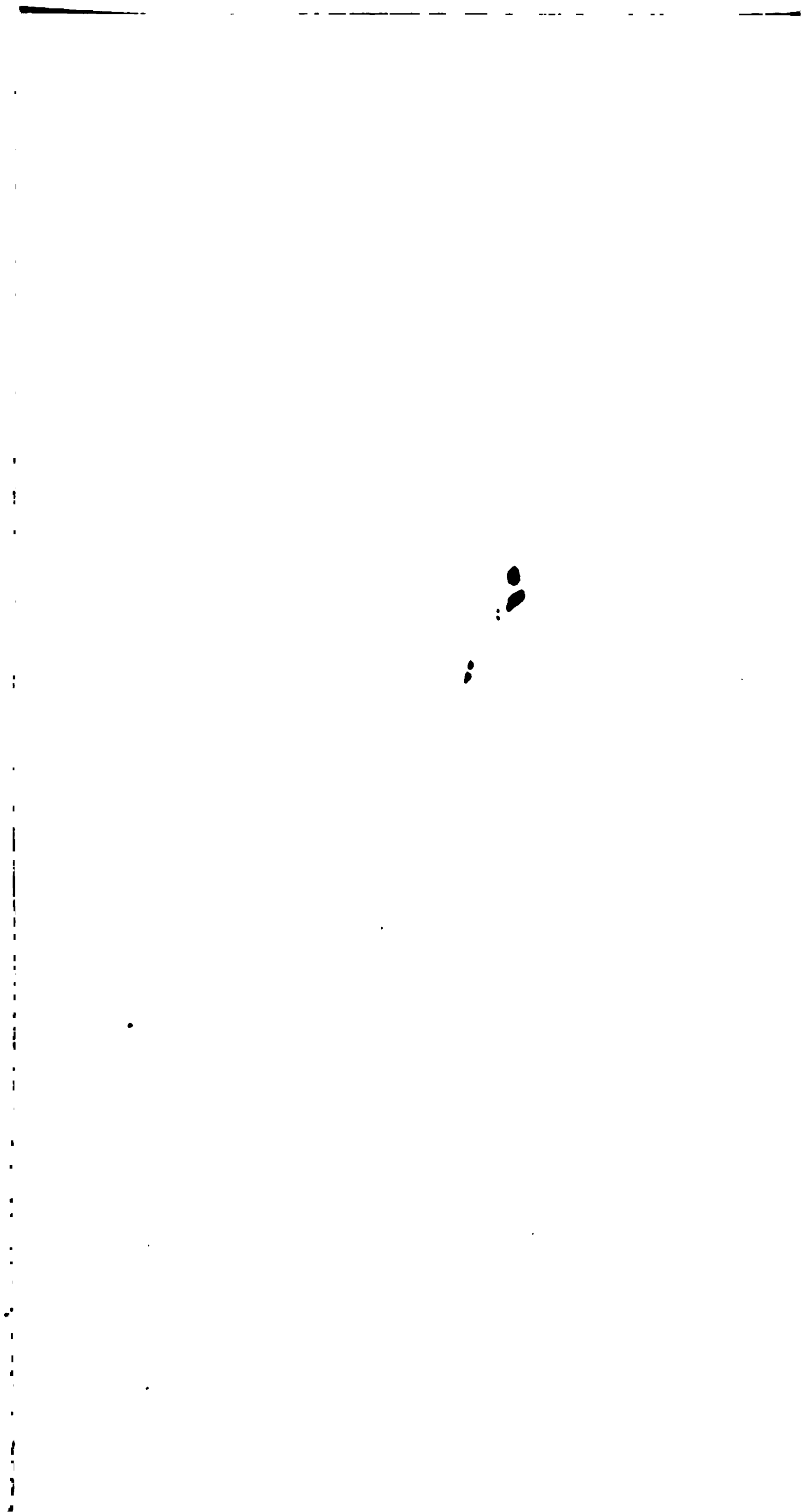
No. 1.—*M. Shiltz*, No. 7.

Location—SE. ¼ sec. 7, T. 7 N., R. 14 W., Oblong Township.  
Elevation—485 feet.

	Depth in feet.	
	From	To
Unknown .....	0	185
Light gray micaceous sandstone or sandy shale. The laminae are from one-twentieth to one-eighth of an inch in thickness...	185	190
Gray micaceous shaly sandstone, with carbonaceous foliations showing leaf fragments and needle-like impressions. Biotite scales noted .....	190	200
Gray micaceous shaly sandstone and black carbonaceous shale...	200	205
Gray micaceous shaly sandstone, with carbonaceous foliations...	205	210
Gray calcareous limestone, partly organic fragmental, apparently concretionary. A fragment of a black silicified piece of a fern stem noted .....	210	215
Light gray sandy shale, micaceous .....	215	220
Gray sandstone, fine in texture, and with a calcareous matrix...	220	230
Light gray, sandy shale .....	230	250
Light gray sandy and micaceous shale and some calcareous concretionary material .....	250	255
Dark micaceous shale and micaceous gray sandstone.....	255	260
Gray, stony shale .....	260	265
Black fissile shale, "miners slate," and greenish fire clay.....	265	270
Gray sandy shale and black shale .....	270	275
Greenish gray shale of fine texture .....	275	280
Light gray shaly sandstone and shale, biotitic.....	280	285
Light gray sandy and micaceous shale, with some dark and soft marly material .....	285	290
Gray sandy shale .....	290	295
Dark gray sandy shale .....	295	300
Dark gray sandy and micaceous, stony shale .....	300	320
Dark gray stony shale and green fire clay .....	320	325
Dark gray shale of fine texture .....	325	335
Dark shale, with impressions of narrow leaf-like forms of vegetation and of fragments of thin shells.....	335	340
"Miners' slate," black, and some coaly shale .....	340	345
Gray sandstone, moderately coarse .....	345	350
Light gray sandy shale, with layers of shaly sandstone, which contains spherules of brown carbonate of iron.....	350	355
Gray calcareous limestone .....	355	360
Gray limestone and some black shale. <i>Chetetes milleporaceus</i> noted .....	360	365
Micaceous gray sandy shale or sandstone with some concretionary limestone .....	365	370
Gray micaceous sandstone and sandy shale .....	370	380
Gray soft shaly sandstone. Some fragments have a brownish tint	380	390
Gray shale of fine texture .....	390	395
Gray sandy shale, light .....	395	400
Micaceous and sandy stiff shale, light gray, with narrow impressions, carbonaceous, of small leaves and bits of brown tests of crustaceans. Many fragments of coal .....	400	405
Medium gray stiff shale, fine texture with many fragments of coal	405	410
Gray shale of fine texture, fossil fragments, bits.....	410	415
Shale, sandy, micaceous greenish gray, with leaf imprints.....	415	420
Shale, sandy, micaceous and greenish gray with small black fragments of vegetation .....	420	425

## Logs—Continued.

	Depth in feet.	
	From	To
Sandstone, fine in texture, micaceous, shaly light gray.....	425	440
Gray shale of fine texture, greenish, only very slightly micaceous	440	445
Sandy shale, gray, micaceous, with bits of vegetation.....	445	450
Light gray shale, stony .....	450	455
Shale, greenish gray, micaceous .....	455	470
Dark greenish gray shale, of fine, even texture.....	470	475
Coal and fine gray shale or fire clay .....	475	480
Limestone, some dark and compact with very slow effervescence, some light, calcareous, crystalline cleavage like that in crinoid stems. Also some limestone and shale, with small spherules of clay iron stone, magnetic after fusion, $\frac{1}{8}$ - $\frac{1}{2}$ mm. in diameter. Wood in coaly pyrite.....	480	485
Shaly sandstone of light gray color .....	485	495
Dark gray stony micaceous shale .....	495	500
Gray sandstone and shale .....	500	505
Gray shale, stiff, of fine texture .....	505	510
Dark gray micaceous shale .....	510	515
Gray dark shale, stiff, micaceous .....	515	520
Gray limestone and coal, limestone is organic fragmental. Crinoid joints noted .....	520	525
Coal and some gray fire clay .....	525	530
Gray sandstone with a little micaceous shale .....	530	540
Gray sandstone with sandy shale .....	540	545
Gray sandstone, fine .....	545	550
Gray micaceous stony, (sandy) shale .....	550	570
Gray shaly fire clay or shale .....	570	575
Dark shale and a little coal. Shale, fine and carbonaceous.....	575	580
Dark shale, coal and fire clay .....	580	585
Black limestone (almost), effervescing slowly, with imbedded organic fragments and pyrites, yellow. Green grains or fillings in limestone, crinoid stems, fragments of shells, and spines, <i>fusulina</i> fossils .....	585	590
Dark gray stiff micaceous shale .....	590	595
Gray micaceous shaly sandstone and shale .....	595	600
Shaly sandstone, gray, micaceous .....	600	605
Dark calcareous limestone, with <i>Athyris</i> , crinoid stems, spines, in copious small fragments, and coal in coarse and fine fragments	605	610
Black shale, gray shale, fire clay and coal .....	610	615
Gray sandstone and black shale .....	615	620
Gray sandy shale .....	620	625
Sandstone, light gray, of fine texture thinly laminated, some yellow concretionary material .....	625	630
Gray shaly sandstone, micaceous .....	635	640
Gray sandy shale and fire clay .....	640	645
Gray sandy shale .....	645	650
Gray shale of fine texture .....	650	660
Gray sandy shale with straight laminations .....	660	665
Black shale, with gray blotches, laminated, "Miners' slate".....	665	670
Black shale and dark gray shale .....	670	675
Light greenish gray shale of fine texture .....	675	685
Black shale, almost slaty .....	685	690
Black stiff shale of fine texture .....	690	695
Dark gray shale .....	695	700
Gray sandy shale .....	700	705
Gray stiff shale, and some earthy shale .....	705	710
Dark gray earthy shale and light gray sandstone .....	710	715
Dark gray laminated shale .....	715	725
Dark gray, laminated, micaceous shale, with imprints of leaves and bits of vegetation .....	725	730
Gray shale, sandy and micaceous, with imprints of fragments of leaves .....	730	735
Dark, very dark shale, micaceous .....	735	740
Black shale, short "miner's slate" .....	740	745
Black shale, short "miner's slate, with pyrites .....	745	750
Gray sandstone with some coal .....	750	755
Sandstone, shale, laminated, dark gray .....	755	760
Dark gray shale .....	760	765
Shale, dark gray, some dark fire clay, coal .....	765	770
Coal, hardly anything else, large sample .....	770	775
Light gray sandy fire clay and coal .....	775	780
Light gray micaceous pyritiferous sandstone and some dark shale	780	785
Light gray micaceous sandstone .....	785	790
Micaceous light gray sandstone (and shale).....	790	795
Sandy gray shale and fire clay, dark, and showing slickensides..	795	800
Dark gray shale, fine in texture, with some slickensided pieces...	800	805
Black "miners' slate" .....	805	810
Black coaly shale, with a light gray rock composed of clay and containing small spherules of clay iron stone $\frac{1}{4}$ - $\frac{1}{2}$ mm. in diameter	810	815



29

1100 011



Logs—Continued.

	Depth in feet.	
	From	To
Dark gray shale with some fine small flakes of mica.....	815	820
Coal and some dark shale, with fragments of brown clay iron stone	820	825
Fire clay, shale, dark and light gray sandstone.....	825	830
Dark gray shale and shaly light gray sandstone .....	830	835
Black shale, coal and fire clay .....	835	840
Gray sandy shale and black shale, some coal .....	840	845
Gray sandy shale, black shale, some coal .....	845	850
Black and gray shale, laminated (?) .....	850	855
Dark gray shale, micaceous, and sandy light gray shale.....	855	860
Black shale and gray shale, micaceous, imprints of leaves.....	860	865
Gray and black shale, some of the black shale with thin laminae of coal .....	865	870
Gray micaceous and sandy shale and shaly sandstone.....	870	875
Black coal shale ("miners' slate") some impure coal and some fire clay .....	875	880
Dark gray shale, stiff. ....	880	885
Some gray shale, some shaly sandstone, some cloddy limestone with crinoid stems and other fossils in fragments. Much of the sample is a stony, sandy fireclay, in which are imbedded spher- ules of clay iron stone 1/8-1/2mm. in diameter. On grinding and polishing some fragments containing these spherules a center of pyrite was seen in some of the spherules. The imbedded spherules lie quite close together, giving the appearance of oolitic rock.....	885	890
Gray micaceous sandy shale and fire clay.....	890	895
Gray shaly micaceous sandstone or sandy shale.....	895	905
Gray shale micaceous sandstone.....	905	910
Gray sandstone, foliated, with carbonaceous black foliations.....	910	920
Yellowish sandstone, ground up, floats on water.....	920	925
Gray sand, less silty. 1/8-1/4 mm.		

No. 2.—O. F. Edwards, No. 15. \

Location—SE. 1/4 sec. 7, Oblong Township.  
Elevation—485 feet.

	Depth in feet.	
	From	To
Loess or silt, with some sand.....	0	5
Boulder clay, thoroughly leached.....	5	15
Yellow boulder clay, calcareous.....	15	20
Yellowish gray calcareous boulder clay with limestone pebbles...	20	25
Sand and gravel washed from boulder clay.....	25	40
Gray boulder clay.....	40	45
Sand and gravel, washed from boulder clay.....	45	50
Mostly sandstone, fairly coarse, with some limestone with frag- ments of fossils, probably Productus semirecticulatus, Retzia, Rhomhpora lepidodendroides, Fisulipora, Tubipora, and joints of crinoid stems.....	50	55
Sandstone, gray, micaceous, friable.....	55	65
Gray shale, slightly micaceous, of comparatively loose consistency	65	85
"Dirt bed" material, dark crumbling silt clay, with some coal....	85	90
Impure fire clay and shale, much coal, and concretions of lime and of carbonate of iron.....	90	95
Dark shale.....	95	100
Gray shale, micaceous.....	100	105
Gray shale and marly material. The latter contained the pygidium of a small trilohite, fragments of bryozoa, and joints of crinoid stems .....	105	110
Almost black shale, containing small ostracods, one-thirtieth of an inch in length and an impression of some smooth flat objects, having the shape of an equilateral triangle with perfectly straight sides measuring a sixth of an inch.....	110	115
Black shale with impressions of fucoidal bands a tenth of an inch in width. Part of sample a dark limestone with crinoid stems, a small pentagonal crinoid plate, and a small brachiopod (Ambocoelia umbonata?).....	115	120
Dark limestone, of characteristic appearance of a "clod" lime- stone (i. e., small limestone overlying a coal), clay, fissile, shale and coal. The limestone has the same fossils as in the previous number .....	120	125
Dark limestone as above, with irregularly bending Ammodiscus tubes about one-fifth inch in diameter, also coal and some fire clay. The coal probably lies at a depth of about 125 feet and is underlaid by the fire clay.....	125	130
Gray micaceous sandstone.....	130	140
Micaceous shaly sandstone and sandy shale.....	140	145



*Logs—Continued.*

	Depth in feet.	
	From	To
Micaceous shaly sandstone.....	145	150
Micaceous shaly sandstone and sandy shale.....	150	155
Coal, some "clod" and some shale.....	155	160
Gray micaceous sandstone.....	160	165
Gray micaceous sandstone with one large piece of coal and one large piece of black shale, containing fragments of some thin shells, probably a <i>Lingula</i> .....	165	170
Gray sandstone, with some calcareous rock.....	170	175
Shaly micaceous gray sandstone.....	175	180
Shaly micaceous gray sandstone, with some small fragments of a calcareous rock.....	180	185
Dark gray sandy shale with large flakes of mica.....	185	190
Dark gray micaceous shale.....	190	195
Gray micaceous shale, with shreds of vegetation.....	195	200
Limestone, compact, yellowish white and dark gray, containing crinoid stems and fragments of other unidentified fossils. Splits into thin fragments, and has a sort of waxy lustre.....	200	210
Gray shale, somewhat micaceous.....	210	215
Fire clay, shale, and sandstone.....	215	220
Mostly sandstone having a calcareous matrix and a few imbedded organic calcareous fragments.....	220	225
Sandy shale or shaly sandstone, with some black mica.....	225	230
Gray sandstone.....	230	235
Gray sandstone, laminated, with thin layers of carbonaceous material .....	235	240
Dark gray sandstone, laminated, micaceous, with thin carbonaceous foliations, and with a calcareous cement.....	240	245
Sandstone, dark gray, shaly, blotitic. Some fragments show yellow specks of presumably concretionary iron carbonate, other fragments are closely studded with minute grains of pyrite....	245	250
Some sandstone like the previous, dark shale and fire clay.....	250	255
Dark shale and sandstone, both blotitic.....	255	260
Black shale and some fragments of a coarse shell breccia, containing crinoid stems.....	260	270
Gray sandstone.....	270	275
Gray sandstone, with a brown, slowly effervescing sandstone....	275	280
Gray sandstone, with a brown, slowly effervescing sandstone, with more of the brown rock, which seems to have a concretionary (oolitic) structure and consists of mainly carbonate of iron with some calcareous grains.....	280	285
Gray sandstone, micaceous.....	285	295
Gray sandstone, micaceous, with some shaly sandstone.....	295	300
Gray sandstone, micaceous.....	300	310
Gray shale.....	310	315
Gray shale with small ostracods, and a spiral <i>Ammodiscus</i> .....	315	320
Gray shale, with narrow, ribbon-shaped impressions of vegetation, ostracods and a spiral <i>Ammodiscus</i> .....	320	325
Gray sandy shale and micaceous sandstone.....	325	330
Micaceous sandstone and coarse gray shale.....	330	335
Coarse sandstone.....	335	340
Sandstone, with yellow grains (concretionary) of carbonate of iron, larger than the sand grains.....	340	345
Gray shale with some very compact fragments of carbonate of lime concretions.....	345	350
Faintly yellowish gray limestone, splitting into thin chips, with many unrecognizable fragments of organic origin.....	350	360
Limestone, like the preceding, with a brachiopod shell fragment, a <i>Zaphrentis</i> , and joints of crinoid stems. Also some dark gray shale .....	360	365
Greenish gray shale.....	365	370
Gray micaceous sandstone and shale.....	370	385
Gray shale of fine texture.....	385	395
Bluish gray sandstone.....	395	400
Shale, mostly dark gray, and of fine texture.....	400	405
Sandstone and sandy shale.....	405	410
Micaceous sandstone and shale.....	410	415
Gray silty shale.....	415	420
Dark gray shale.....	420	425
Gray sandstone and shale.....	425	430
Gray shale and some impure coal.....	430	435
Micaceous gray shale, with fragments of concretions of carbonate of iron.....	435	440
Gray shale.....	440	445
Gray shale or fire clay.....	445	450
Gray shale, stony and dark, micaceous.....	450	455
Some gray shale like the above. But mostly a dark, dirty yellow clay, too oily to mix with water, giving off gas and oil when heated and losing much of its weight, probably 30 or 40 per cent.....	455	460

*Logs—Continued.*

	Depth in feet.	
	From	To
Like the previous, with much coal .....	460	465
Sandstone, gray, micaceous, and some pieces of a black limestone, containing fragments of fossils .....	465	470
Oily clay, with coal and gray stony shale, some pyrite.....	470	475
Like the previous, with much coal and some fossiliferous limestone	475	480
Sandstone, with some yellow limestone containing organic fragments .....	480	485
Gray shale and some sandstone .....	485	490
Dark gray shale .....	490	500
Dark gray shale with a small Ammodiscus and some narrow fucoid markings .....	500	505
Gray limestone with imbedded yellow fragments of fossils with some black shale and coal .....	505	510
Mostly fire clay and coal .....	510	515
Sandstone, some coarse, some thinly laminated .....	515	520
Sandstone, comparatively coarse .....	520	525
Sandstone of average texture .....	525	535
Dark arenaceous shale .....	535	540
Shaly sandstone, black shale and coal .....	540	545
Some coal, fire clay, and dark sandy shale .....	545	550
Mostly coal, some black shale and fire clay .....	550	555
Gray sandstone, with a compact yellowish gray limestone breaking frequently into rectangular fragments, and probably of concretionary origin .....	555	560
Dark shale and sandy gray shale with fragments of concretions of carbonate of iron .....	560	565
Gray shaly sandstone .....	565	570
Dark "cloddy" shale and coal with some sandstone.....	570	575
Coal, stony fire clay and sandy shale .....	575	580
Gray sandy shale .....	580	585
Shaly sandstone .....	585	590
Shaly sandstone, greenish sandy shale, coal and concretionary carbonate of iron .....	590	600
Gray shale .....	600	605
Dark gray shale, hard .....	605	630
Dark gray shale with a fine textured and compact limestone, in part gray, in part yellow, apparently concretionary.....	630	635
Gray shale, with concretionary limestone like that in the above..	635	640
Gray sandstone and some black shale .....	640	645
Gray fine-grained sandstone, with some black coaly shale.....	645	650
Like the preceding, but less shale .....	650	655
Gray shale and black shale .....	655	660
Gray shale .....	660	665
Black micaceous shale and gray shale with concretionary material	665	670
Black micaceous shale with concretionary material.....	670	675
Gray and black shale and coal .....	675	680
Coal and gray shale .....	680	685
Gray shaly and micaceous sandstone with much carbonaceous material, and with imprints of vegetation abundant in some fragments .....	685	690
Dark gray sandstone of fine texture with thin layers of carbonaceous material .....	690	695
Dark gray micaceous shale with imprints of fern leaves.....	695	700
Dark gray shale, micaceous .....	700	705
Dark gray shale, micaceous, stony .....	705	725
Black shale, hard .....	725	730
Black shale .....	730	735
Black shale, with "clod" limestone containing a crinoid stem and some coal .....	735	740
Gray micaceous sandstone, comparatively coarse in texture.....	740	745
Gray sandstone .....	745	750
Shale, almost black .....	750	755
Black shale and coal .....	755	760
Black shale and fragments of "clod" limestone, coal and fire clay	760	770
Gray micaceous sandstone, with brown concretionary material....	770	775
Gray sandstone and black shale .....	775	780
Gray shale and some sandstone .....	780	785
Gray sandstone and shale, with much brown concretionary material .....	785	790
Like the preceding, with some calcareous material .....	790	795
Gray shale, and some fire clay with thin carbonaceous flakes imbedded .....	795	800
Dark gray shale, micaceous .....	800	810
Shale, almost black .....	810	820
Black and gray shale, some "clod" limestone, some fire clay and some concretionary carbonate of lime .....	820	825
Black clayey shale, some coaly shale, some brown and soft concretionary material .....	825	830
Dark bluish shale and some sandstone .....	830	835

Logs—Continued.

	Depth in feet.	
	From	To
"Clod" limestone, dark and black shale, coal, and greenish shaly fire clay .....	835	840
Bluish gray shaly fire clay and black shale .....	840	845
Gray fire clay and some coal .....	845	850
Black shale, gray shale and sandstone .....	850	855
Gray shale and shaly sandstone .....	855	860
Black shale and coal, with some concretionary carbonate of iron..	860	875
Black shale and gray shale with much concretionary carbonate of iron and some coal .....	875	880
Dark gray shale with concretionary carbonate of iron.....	880	885
Dark gray shale, with much concretionary carbonate of iron.....	885	890
Black micaceous shale .....	890	895
Black shale slightly micaceous .....	895	900
Mostly black shale, with some concretionary material .....	900	905
Thinly laminated shale with alternate layers light and dark.....	905	910
Dark gray, stiff shale .....	910	915
Dark gray shale, laminated, with alternate layers of light, sandy, dark and finer texture .....	915	920
Laminated shale, sandy laminae, about four, in a thickness of a sixteenth of an inch .....	920	925
Like the previous, but with sandy lamirae, thicker .....	925	940
Coaly black shale and gray shaly sandstone, both micaceous.....	940	945
Black shale, greenish gray shale, and sandstone.....	945	950
Incoherent gray sand, some 70 per cent of the grains measuring from one-eighth to one-fourth of an millimeter in diameter, some 20 per cent measuring less than one-eighth mm. and only a few per cent measuring more than one-fourth of a mm. The sand floats on water .....	950	955
Black shale .....	955	960
Black shale, brownish concretionary carbonate of iron and some sand .....	960	965
Gray, faintly brownish sand which floats on water, with some coherent lumps which emit oil when heated .....	965	970
Thinly laminated shaly sandstone, alternate laminae of dark and light material. Laminae mostly about one-half millimeter in diameter. Slightly effervescent with acid .....	970	975
Like the preceding, but more shaly and lamination less frequently to be seen .....	975	980
Dark stony shale, with thin layers of alternating light and dark material, with some concretionary brownish carbonate of iron...	980	985
Sandy laminated shale or shaly sandstone, layers bending and curving .....	985	990

NOTE—Dr. Udden adds the following statement to the above log: "The limestone at 360 feet is probably correlative with a limestone horizon which occurs at about 160 feet above Coal No. 6, in the Belleville region. The limestone at 200 feet is most likely an equivalent to the Carlinville limestone about 150 feet higher in the section. Coal No. 6 is believed to be the coal at 510 feet. The several coal seams penetrated are no less than 14 or 15 in number, and fall into three groups. The lower groups, consisting of five coals probably of small size, includes the coals from 670 to 850 feet below the surface. It probably includes coals 1 and 2 of northern Illinois. The middle group comprises the coals from 430 to 580 feet below the surface and no doubt includes Coal No. 6. The uppermost group of coal beds, comprising some small coals of the "Upper Coal Measures" of Worthen, are the coals in the upper 200 feet of the section. The sandy shale in the lower part of the section, which contains the oil sand, exhibit a quite persistent lamination of thin dark and light layers. It is believed that this feature may be useful in their identification in the nearest outcrops."

No. 3.—L. R. Newlin, No. 21.

Location—SW. ¼ SE. ¼ sec. 27, T. 6 N., R. 14 W., Martin Township.  
Elevation—498 feet.

	Depth in feet.	
	From	To
Drift .....	1	25
Dark limestone, brown limestone, fragments of coal and yellow sand .....	25	30

*Logs—Continued.*

	Depth in feet.	
	From	To
Dark limestone with sand .....	30	40
Gray sandstone with infiltrated lime .....	40	45
Gray sandstone, some yellow limestone, and siderite.....	45	50
Gray sandstone with some yellow limestone. Pyrite noted.....	50	60
Coarse gray micaceous sand with fragments of coal.....	60	65
Coarse gray micaceous sand .....	65	70
Coarse micaceous sandstone .....	70	75
Coal and some fire clay .....	75	80
Gray micaceous sand. A little lime in sand.....	80	110
Dark micaceous shale and sand .....	110	115
Gray micaceous shale and sand. A few fossil fragments.....	115	120
Limestone, fragmental, organic, crinoid fragments and bryozoa noted .....	120	125
Light gray shale of fine texture .....	125	130
Limestone, in part fragmental, and some shale .....	130	135
Gray sandy shale with some crinoidal limestone .....	135	140
Gray micaceous sandy shale, with some limestone .....	140	145
Gray micaceous shale .....	145	150
Gray micaceous sandstone and much darker clay iron stone.....	150	155
Gray micaceous shaly sandstone, with imbedded shreds of vege- tation .....	155	160
Gray micaceous shaly sandstone .....	160	170
Fine grained, gray micaceous sandstone with interstitial lime....	170	175
Some black fissile shale. Mostly a dark blotched organic breccia limestone, containing many crinoid stems, some small <i>Athyris</i> and some crinoid spines .....	175	180
Like the preceding, with some sandstone and coal .....	180	185
Sandstone, limestone and shale .....	185	190
Micaceous sandstone, with some laminated sandy shale.....	190	195
Gray sandstone, quite coarse .....	195	210
Micaceous silty gray shale .....	210	240
Gray shale, and some dark shale .....	240	245
Black shale, clay iron stone, crinoid stems, <i>Bellerophon</i> , <i>Athyris</i> , a <i>cyathophylid</i> , two gastropods .....	245	250
Black shale and coal .....	250	255
Yellowish and gray concretionary siderite and limestone, with some fire clay and coal .....	255	260
Gray shale .....	260	265
Gray sandstone and some dark shale .....	265	270
Gray micaceous sandstone .....	270	275
Laminated gray sandstone of fine texture .....	275	280
Gray shale and fire clay .....	280	285
Gray sandstone .....	285	290
White sandstone with siderite concretions .....	290	295
Laminated sandstone .....	295	300
Micaceous sandstone and dark shale .....	300	305
White micaceous sandstone .....	305	330
Gray sandy shale, micaceous .....	330	345
Gray micaceous sandy shale and some dark gray shale.....	345	350
Like the preceding with some clay iron stone .....	350	355
Mostly coal, some shale and some fragments of concretionary limestone .....	355	360
Gray sandstone with siderite .....	360	365
Gray sandy shale, micaceous .....	365	375
Gray sandstone, with some limestone, white .....	375	380
Gray sandstone, with interstitial calcareous material and some pure white limestone .....	380	385
Greenish gray sandstone .....	385	390
Gray sandstone, with many concretionary spherules about 1/2 millimeter in diameter .....	390	395
Gray sandstone .....	395	400
Dark gray sandy shale, stiff .....	400	405
Dark gray micaceous shale .....	405	410
Dark gray shale .....	410	415
Dark shale and limestone, with pyrite calcite with many crinoid stems, and an <i>Estheria</i> (?) .....	415	420
Coal with some limestone fragments and shale .....	420	425
Coal and fire clay .....	425	430
Gray sandstone, with some yellow fragments or concretionary material .....	430	435
Gray sandstone.....	435	440
White sandstone.....	440	445
Yellowish white sandstone.....	445	450
Dark shale.....	450	455
Black shale and coal.....	455	460
Gray sandstone, micaceous .....	460	465
Gray limestone and some large quartz grains.....	465	470
Gray sandy shale, micaceous.....	470	475

*Logs—Continued.*

	Depth in feet.	
	From	To
Sandstone and some limestone.....	475	480
Shaly sandstone, with some siderite concretions.....	480	485
Black and dark micaceous shale.....	485	490
Black dolomitic limestone, with calcite, Rhombopora, lepidodendroides, crinoid stems.....	490	495
Black limestone, with crinoid stems and coal.....	495	500
Gray micaceous sandstone, with some interstitial calcareous material .....	500	510
Gray sandstone and a dirty yellow dolomitic limestone, concretionary (?).....	510	515
Limestone .....	515	520
Gray silty shale with carbonaceous shreds imbedded.....	520	525
Gray silty shale with thin layers of shiny coal of silky lustre. Coal layer in one fragment adhering to the shale.....	525	530
Gray shale of fine texture.....	530	535
Dark shale of fine texture.....	535	555
Black shale and coal, mostly impure.....	555	560
White sandstone of fine texture.....	560	565
Light gray shale, with small spherical siderite concretions.....	565	570
Gray shale, with much siderite, in fragments and in minute spherical concretions. Some bright red fragments noted, "rusty"....	570	575
Shaly sandstone and sandy shale, gray, with siderite as in preceding sample.....	575	580
Sandy shale, gray, with siderite fragments.....	580	585
Gray sandstone, some shale and siderite.....	585	590
Shaley sandstone or sandy shale, gray.....	590	595
Sandstone, black shale and "clod," with some coal and siderite concretions .....	595	605
Shale and shaly sandstone, with fragments of siderite concretions and coal.....	605	610
Greenish fire clay and shale.....	610	615
Shaly sandstone, gray.....	615	620
Black miner's slate, with siderite concretions.....	620	625
Black miner's slate, with sandstone and gray shale.....	625	630
Gray sandy shale.....	630	635
Dark gray sandy shale, micaceous.....	635	645
Gray laminated shaly sandstone.....	645	650
Dark gray sandy shale.....	650	655
Black stiff shale, almost miner's slate.....	655	665
Black stiff shale and impure coal.....	665	670
Black shale and black concretionary limestone, with fossils.....	670	675
Gray sand and gray sandy shale with some coal.....	675	680
Coal with very bright (black) lustre and fire clay.....	680	685
Coal of bright lustre and brownish earthy streak and some fire clay .....	685	690
Gray gritty fire clay and dark shale.....	690	695
Shale, gray.....	695	705
Shale, gray, and some siderite.....	705	710
Dark limestone, some dark shale and pyrite.....	710	720
Dark shale, some dark limestone and spherulitic siderite.....	720	725
Shale, dark, some coal; a little dark limestone.....	725	730
Dark shale, some coal, and spherulitic siderite.....	730	735
Gray micaceous shale, and bits of yellow limestone.....	735	740
Gray micaceous shale, and fragments of siderite.....	740	745
Dark micaceous shale, some siderite, bits of coal and lime.....	745	750
Gray micaceous shale and siderite.....	750	755
Gray micaceous shale, some fire clay, coal and pyrite.....	755	760
Coarse gray micaceous shale, pyrite, little shale.....	760	770
Black shale and some coarse sandstone.....	770	775
Coal and fire clay, and some gray shale.....	775	780
Coal and fire clay, and some gray fire clay with pyrite.....	780	785
Black shale, bits of yellow limestone, and spines of brachiopods, and spherulitic siderite.....	785	790
White sandstone and shale, black, some yellow limestone and coal, and spherulitic siderite.....	790	795
Dark shale, some little sandstone, siderite and limestone.....	795	800
Black shale and some siderite.....	800	810
Black shale.....	810	820
Gray micaceous shale and some sandstone.....	820	825
Limestone, dark and white; some sandstone with infiltrated lime; gray micaceous shale, pyrite and some crinoid joints.....	825	830
Dark and white limestone with crinoid stems and pieces of shells, and pyrite.....	830	835
Gray micaceous sandstone, and some dark and white limestone...	835	840
Black micaceous shale, some sandstone, and white limestone.....	840	845
Black micaceous shale.....	845	850
Black micaceous shale, some white sand and siderite.....	850	860
Gray sandstone and dark shale.....	860	865
Gray sandstone, some dark shale and siderite.....	865	870



*Logs—Continued.*

	Depth in feet.	
	From	To
Coarse gray sandstone and a little shale.....	870	875
Gray micaceous sand.....	875	885
Gray sand and some dark shale.....	885	890
Gray sand, white limestone, a little shale and pyrite.....	890	895
Gray sandstone, bits of limestone, shale and siderite.....	895	905
Gray micaceous sand.....	905	940
Gray micaceous sand, and some dark shale.....	940	950
Dark sandy micaceous shale.....	950	955

No. 4.—*C. E. Siler, No. 4.*

Location—NE. corner sec. 5, Honey Creek Township.

Elevation—495 feet (estimated).

	Depth in feet.	
	From	To
<i>Pleistocene:</i>		
Loess or yellow loam.....	1	5
Gravel and sand.....	5	10
Sand and gravel.....	10	15
Sand and gravel washed from boulder clay.....	15	20
Boulder clay.....	20	40
<i>"Coal Measures":</i>		
Limestone, with imbedded crinoid stem, a small <i>Spirifer cameratus</i> , a small gasteropod, and a piece of a plant stem.		
Some roof shale.....	40	45
Shale, greenish gray, micaceous.....	45	50
Gray shale.....	50	55
Fine-grained micaceous sandstone with a calcareous matrix...	55	62
Arenaceous, gray shale.....	62	68
Micaceous, gray shale.....	68	74
Micaceous, dark gray shale.....	74	80
Micaceous sandstone, with fragments of concretions of carbonate of iron.....	80	86
Sandstone, gray micaceous, calcareous and shaly, with many fragments of shells of yellowish color.....	86	92
Gray shale and micaceous shaly sandstone, with a small <i>Myalina</i> , and many fragments of shells. Some coal noted.....	92	98
Some limestone, but mostly shale. The shale is dark gray, micaceous, and marly. It has many minute, apparently concretionary grains, yellow, of carbonate of iron. These appear like coarser grains in a fine textured matrix. The limestone is dark with imbedded flat fragments of <i>Myalina</i> , shells, and one piece was seen with imbedded trenchantly marked tubules, believed to be irregularly curving forms of <i>Ammodiscus</i> , measuring from .1 to .15 mm. in diameter....	98	103
Micaceous sandstone or sandy shale, with some brownish limestone .....	103	109
Micaceous gray sandstone of fine texture, almost a shale.....	109	114
Micaceous sandstone and some green grains, with some brown calcareous coaly fragments.....	114	119
Fine-grained sand, micaceous, and with brown and green grains, as above.....	119	139
Like the previous, but with occasional carbonaceous fragments .....	139	145
Gray, micaceous sandstone, with some dark and some green grains, and some shreds of carbonaceous material.....	145	150
Black fissil "miner's slate" with prytized fossil shells, one probably being an <i>Aviculopecten</i> , another like a minute <i>Myalina</i> .....	150	155
Some shaly fire clay and a little coal, but chiefly gray micaceous shale with minute concretions of carbonate of iron of the size of small sand grains.....	155	160
Gray micaceous shaly sand. One large fragment showing lines believed to be wave marks.....	160	165
Gray slightly micaceous shale, with very thin calcareous laminae .....	165	170
Gray shale, slightly micaceous shale with a brownish minute disc-shaped fossil of spiral structure, probably an <i>Ammodiscus</i> .....	170	175
Gray shale, faintly micaceous.....	175	180
Black fissile shale, with a very fine rectangular reticulation seen on a cleavage plane. Some fragments of coal.....	180	185
Greenish gray fire clay and shale, with fragments of dark concretionary limestone.....	185	190
Fine-grained micaceous sandstone or shale, with yellow specks of concretionary siderite.....	190	200

*Logs—Continued.*

	Depth in feet.	
	From	To
<i>Coal Measures—Continued.</i>		
Gray, dark, and compact concretionary carbonate of iron in large fragments.....	200	205
Dark gray shale, with <i>Ammodiscus</i> (?) .....	205	210
Mostly dark concretionary carbonate of iron in large fragments, with some dark stony shale .....	210	215
Dark shale of fine texture .....	215	220
Dark shale slightly micaceous, with <i>Ammodiscus</i> (?) and minute shreds of other fossils .....	220	225
Dark micaceous shale, slightly calcareous .....	225	230
Like the previous, with minute shreds of vegetation.....	230	240
Dark micaceous shale, like that in the previous sample, with <i>Ammodiscus</i> (?) and a small ostracod.....	240	245
Dark micaceous shale, with impressions of fern leaves, and with a spiral <i>Ammodiscus</i> (?) and one tube of an <i>Ammodiscus</i> (?) only slightly curving. Some keeled impressions were noted on one fragment and stem joints and spines of crinoids were also noted .....	245	250
Dark gray shale .....	250	255
Gray sandy shale .....	255	260
Gray sandy shale, or shaly sandstone, showing some dark grains under the lens .....	260	265
Shale, greenish gray, sandy and micaceous .....	265	270
Greenish gray micaceous sandstone and red clay marl.....	270	275
Greenish gray sandy shale .....	275	280
Comparatively coarse sandstone, with some green and some pink grains. Also some lumps of fire clay, which contain small spherical nodules of black oxide of manganese from one-fourth to one-third mm. in diameter. Some of these concretions are grown together in groups of two and three .....	280	286
Comparatively coarse sandstone, with some interlaminated shale .....	286	290
Mostly sandstone, gray and of fine texture, with some shale. Color various .....	290	295
Sandy gray shale or shaly sandstone .....	295	302
Micaceous gray shale .....	302	308
Dark gray shale, not micaceous .....	308	320
Very dark shale, carbonaceous and sandy. Most of it is finely laminated and shows shreds of vegetation .....	320	335
Shaly sandstone or shale, thinly laminated, containing brownish yellow grains (concretionary?) larger than the grains of the rock and also some still larger black grains..	338	350
Like the previous, with the brown grain least abundant in the layers of the finest texture, which are carbonaceous...	350	356
Sandstone, with interlaminated carbonaceous streaks showing vegetable tissue .....	356	362
Coal, shale, and sandstone .....	362	368
Mostly fire clay .....	368	374
Mostly concretionary material, carbonate of lime and iron, and some shale .....	374	380
Concretionary limestone and carbonate of iron, in shale.....	380	387
Light gray micaceous and sandy shale .....	387	394
Micaceous and sandy gray shale .....	394	401
Micaceous sandstone and gray shale .....	401	407
Dark gray shale .....	407	413
Dark gray limestone, consisting of organic fragments, some black shale and coal. The limestone contains <i>Chonetes mesolobus</i> (?), crinoid stems and a gasteropod ( <i>Bellerophon carbonaria</i> ?) .....	413	419
Fire clay, gray and black shale, and coal .....	419	426
Gray shale .....	426	432
Gray sandstone of fine texture .....	432	438
Gray shale, arenaceous and micaceous .....	438	450
Shaly sandstone, micaceous and with rusty specks .....	450	456
Gray shale, micaceous and sandy .....	456	462
Dark gray shale, micaceous and sandy .....	462	468
Like the above, but darker .....	468	480
Almost black dolomitic limestone, uniform in texture, emits sulphurous odors when heated and becomes slightly magnetic before the blowpipe, and contains joints of crinoid stems, <i>Chonetes mesolobus</i> (?), <i>Rhombopora lepidodendroides</i> (?), fragments of brachiopod shells, and <i>Fusulina</i> of the kind occurring in the limestone above Coal number 6.....	480	486
Black fissile shale and some coal, with limestone.....	486	492
Gray sandy shale and some dark shale .....	492	498
Gray slightly sandy shale .....	498	504
Soft gray micaceous shale .....	504	510
Gray shale, soft and micaceous, with some dark shale showing shreds of vegetation .....	510	516

*Logs—Continued.*

	Depth in feet.	
	From	To
<b>Coal Measures—Continued.</b>		
Gray slightly micaceous sandstone, with some large and thin fragments of black dolomitic limestone .....	516	522
Gray sandstone, with some limestone like that in the previous sample .....	522	528
Dark gray highly micaceous shale, with scales of biotite and on fresh fractures having an appearance like that of Archaen schists .....	528	534
Gray sandstone and sandy micaceous shale, with some dark shale and fragments of coal .....	534	540
Dark gray sandy shale, micaceous, with some fire clay.....	540	546
Dark shale of fine clayey texture .....	546	552
Dark gray shale, micaceous and stony .....	552	564
Dark gray shale, of clayey texture .....	564	570
Dark gray shale, with narrow fucoid bands in some cleavage planes .....	570	576
Black fissile shale .....	576	588
Mostly light gray sandstone, some gray shale, with fragments of coal and limestone .....	588	594
Mostly light gray sandstone with some dark shale.....	594	600
Dark micaceous, shaly sandstone .....	600	606
Dark micaceous, sandy shale .....	606	612
Dark, almost black, shale .....	612	618
Dark, almost black, shale, with fragments from concretion of carbonate of iron .....	618	624
Gray shale, of clayey texture .....	624	636
Gray shale, with some little mica .....	636	642
Like the previous sample, but slightly coarser and with a little more mica .....	642	648
Black shale, of fine texture, but with some mica, and with earthly lustre .....	648	654
Black shale, much pyrites of iron, and some coal. The shale has imbedded calcareous fossils among which a piece of lamellibranch valve and a Bellerophon were noted, and also impressions of an insect wing (?). In the fragments of pyrites was noted a Nucula, a Bellerophon carbonaria (?) in part filled by zinc blende, and a fragment of a brachiopod. In the coal some woody tissue was noted.....	664	660
Light gray sandy fire clay filled with small crystals of pyrites .....	660	666
Dark gray micaceous and sandy shale .....	666	672
Dark gray shale of fine texture, with pyrites and coal.....	672	678
Black fissile shale and finely laminated coal with brown streak. Woody fibre seen in some pyrite .....	678	684
Shaly fire clay, light gray and stony .....	684	690
Gray shale and sandstone .....	690	696
Sandstone, somewhat coarse, laminated, in alternate layers of white and carbonaceous black material, some layers micaceous .....	696	708
Dark gray shale, stony, sandy and micaceous .....	708	714
Gray shale, stony, sandy and micaceous .....	714	720
Dark shale, with some laminated coal and some fire clay.....	720	726
Gray sandstone, shaly and micaceous .....	726	732
Soft gray shale .....	732	738
Some gray shale, and some dark micaceous shale with concretionary carbonate of iron .....	738	744
Almost black fissile shale, with concretionary carbonate of iron .....	744	750
Gray sandstone of fine texture .....	750	756
Dark gray shale, arenaceous and micaceous .....	756	762
Laminated, gray sandstone, micaceous, alternate layers in black and carbonaceous, the black layers very thin, the light layers in several cases measuring one-tenth of an inch in thickness .....	762	768
Coarse micaceous sandstone, laminated with alternate layers of dark carbonaceous shale .....	768	786
Like the previous, sandstone coarser and softer .....	786	798
Dark gray shale and some lighter shale .....	798	804
Almost black shale, fine in texture .....	804	817
Light gray sandy shale, slightly micaceous .....	817	830
Dark gray and light gray shale of fine texture .....	830	836
Gray sandstone, of very fine texture .....	836	848
Dark bluish gray shale of very fine texture with concretionary carbonate of iron .....	848	854
Almost black shale, very fine in texture .....	854	860
Coarse sandstone .....	860	866
Almost black shale, fine in texture .....	866	878
Almost black shale, with biotite .....	878	884
Black shale, fine in texture .....	884	902
Gray sandstone, fine grained .....	902	908



## Logs—Continued.

	Depth in feet.	
	From	To
<i>Coal Measures—Concluded.</i>		
Gray sandstone .....	908	914
Black shale of fine texture, with concretions of carbonate of iron .....	914	938
Gray shale and sandstone, with some large and thin chips of coal .....	938	944
Gray soft sandstone and shale. The rock in this and the previous sample appears to be a mixture of alternating layers of shale and sandstone .....	944	950
Gray soft sand, only a single fragment of loosely coherent rock, remaining in the sample. Size of grains is about one-fourth mm. in diam. Apparently oil sand; the grains float on water .....	950	955
Gray sand, with grains mostly from one-eighth to one-half mm. in diameter. The largest grains all have crystalline facets resulting from secondary growth. Sand floats on water .....	955	959
Sand like the previous, but faintly brownish yellow .....	959	963
Sand like that in the three previous samples, except that it is more nearly white in color .....	963	967

NOTE—Dr. Udden states that two specimens of a *Fusulina* were found in a limestone occurring at the depth of 480 to 486 feet from the surface, and this no doubt is the limestone which forms the cap-rock over Coal No. 6. The rock itself has been altered to a dark dolomite, effervescing very tardily in acid. It has a dark gray color which is evidently due to the presence of iron pyrites in microscopic particles. On heating in a closed tube it gives off sulphurous odors and becomes slightly magnetic. The entire section represented by the two samples studied consists of variations of shales, sandstones, limestones, coals and fire clays, with calcareous concretionary matter, and more frequently concretions of carbonate of iron. They all have the general appearance characteristic of the Pennsylvanian series in this region. About a dozen coal beds were penetrated, which occur in three groups, not counting an evidently thin bed of somewhat shaly coal, which lay at a depth of 904 feet below the surface and only a few feet above the oil sand. The lowest of these groups which presumably includes equivalents of Coals Nos. 1 and 2 in northern Illinois, is represented by three seams at 720, 678 and 660 feet below the surface. The middle group, which includes Coal No. 6 is represented by one coal at 540 feet, by Coal No. 6 at the depth of 485 feet, another coal, overlain by limestone, at 420 feet and a coal overlain by sandstone at 365 feet. The coal beds of the "Upper Coal Measures" of Worthen are represented by an apparently small seam of coal at a depth of 185 feet, one small coal associated with a capping calcareous bed at the depth of 95 feet, and a black shale under a limestone at the very surface of the bed rock under the drift, fifty feet below the surface. The spiral shell of an *Ammodiscus* was observed in cleavage surfaces of some shales in the "Upper Coal Measures" and presumably the same fossil, in the form of irregularly bending tubes occurred in some limestone at the depth of 100 feet.

## No. 5.—C. F. Curtis, No. 8.

Location—NE. corner sec. 11, Oblong Township.

Elevation—475 feet (estimated).

	Depth in feet.	
	From	To
Yellow boulder clay .....	1	10
Boulder clay and drift gravel .....	10	15
Drift gravel and sand .....	15	20
Drift gravel and sand, with some boulder clay .....	20	25

*Logs—Continued.*

	Depth in feet.	
	From	To
Drift sand and gravel .....	25	30
Drift .....	30	35
Drift sand and gravel .....	35	60
Drift gravel and some sand .....	60	70
Drift sand and gravel. A few bits of coal .....	70	75
Drift sand and gravel .....	75	90
Drift sand and gravel, with some shale .....	90	110
Sandy micaceous shale .....	110	115
Dark micaceous shale .....	115	120
Sandy dark gray shale .....	120	135
Sandstone, sandy shale and coal. Some fragments of limestone noted and some pyrites with woody fibre .....	135	140
Black shale, fire clay and coal .....	140	145
Gray and yellow limestone. Gray sandstone and coal with some shale .....	145	150
Gray sandstone, micaceous and of fine texture .....	150	155
Like the preceding, with some siderite .....	155	165
Moderately coarse gray and yellow micaceous sand .....	165	170
Gray shale, micaceous sand .....	170	180
Moderately coarse micaceous sandstone .....	180	190
Gray, fine sandstone, and yellow concretionary limestone, in which is considerable pyrite .....	190	195
Gray micaceous sandy shale and concretionary siderite .....	195	205
Gray micaceous sandy shale and a few pieces of yellow limestone .....	205	210
Gray micaceous sandy shale .....	210	215
Gray micaceous shale .....	215	220
Gray micaceous shale, a few pieces of gray sandstone, some white limestone and coal .....	220	225
Gray micaceous shale, with imprint of vegetation, some fire clay and pieces of white limestone .....	225	230
Dark gray micaceous shale .....	230	235
Dark gray and gray micaceous shale .....	235	240
Dark micaceous shale .....	240	245
Black shale, a few pieces of sandstone, siderite, yellow limestone and pyrite .....	245	250
Black shale and coal, some pure calcite and white limestone .....	250	255
Black shale and coal, some dark limestone and gray sandstone .....	255	260
Darkish gray limestone (nodular in structure), some coal gray sandstone and bits of pyrite .....	260	265
Gray shale, concretionary yellow limestone, some white limestone, some gray sandstone, and some black coaly shale .....	265	270
Yellowish limestone, some gray limestone, gray sandstone, some concretionary sandstone, a little coal and pyrite .....	270	275
Greenish gray stony shale, with a few very thin laminae of coal .....	275	280
Gray micaceous stony shale .....	280	290
Dark gray stony shale .....	290	295
Dark greenish gray shale of fine texture .....	295	305
Dark shale of fine texture .....	305	310
Gray sandstone, brown concretionary siderite, gray shale, black shale, gray limestone, crinoid stems and a few fragments of coal .....	310	315
Gray shale and grayish brown fossiliferous limestone, with crinoid stems, brachiopod spines, pieces of shells, etc. A piece of concretionary siderite showed a fissure filled with clear calcite .....	315	320
Gray shale, concretionary brown siderite, sandstone and coal. The limestone contains organic fragments. The coal is impure and shows very thin lamination .....	320	325
Gray sandstone containing shreds of carbonaceous material and pyrite, with some shale .....	325	335
Light gray thin-bedded micaceous sandstone, some pieces with infiltrated lime .....	335	345
Mostly a grayish limestone containing some fine siliceous material, with some yellow and some white limestone and some black shale .....	345	350
Gray limestone and some gray sandy lime, showing occasional obscure fragments of fossils .....	350	355
Gray limestone and white limestone of waxy lustre .....	355	360
Greenish gray micaceous and sandy shale and some lime .....	360	380
Greenish gray shale of somewhat fine texture .....	380	385
Dark gray shale of somewhat fine texture .....	385	395
Gray shale .....	395	400
Dark almost black micaceous shale, showing narrow traversions impregnated with thin green films of pyrite .....	400	405
Black shale with shreds of carbonaceous vegetation. Some gray shale and some siderite .....	405	410
Gray shale with carbonaceous shreds, some black coaly shale. A few pieces of siderite noted .....	410	415
Gray and black, coaly shale and gray sandstone .....	415	425
Gray sandstone, some gray shale and pieces of siderite .....	425	435

## Logs—Continued.

	Depth in feet.	
	From	To
Gray micaceous sandy shale, some gray shale and concretionary siderite .....	435	440
Dark gray shale .....	440	445
Dark gray shale and concretionary siderite .....	445	455
Dark gray shale, with imprints of vegetation, and some siderite...	455	460
Gray shale with imprints of vegetation. Some siderite and some carbonaceous shale .....	460	465
Gray sandstone and white limestone, some fragments of coal and of concretionary siderite.....	465	475
Gray micaceous shale, some yellow concretionary siderite, a little limestone and gray shale.....	475	480
Gray micaceous sandy shale, some yellow limestone and siderite..	480	485
Dark gray sandy micaceous shale, some gray shale, concretionary siderite and some gray sandstone.....	485	490
Dark micaceous shale.....	490	495
Dark gray micaceous shale and some siderite.....	495	500
Black limestone and some black shale, and some siderite. Crinoid stems noted.....	500	505
Black limestone, some black shale, some coal and siderite. Crinoid stems noted.....	505	510
Black limestone, some black shale, coal and siderite. A <i>Fusulina</i> lamellibranch (?) shell, <i>Aviculopecten</i> carboniferous, a minute gasteropod, and some crinoid spines and stems noted. The limestone yields bituminous and sulphurous odors when heated.....	510	515
Dark limestone, some pieces impregnated with small particles of pyrite, some coal and black shale, some siderite and fragments of white limestone and calcite.....	515	520
Black limestone, a few pieces of coal, pyrite, siderite, white limestone and crinoid stems.....	520	525
Gray micaceous sandstone, some black limestone, coal and gray shale with pyrite siderite and white limestone.....	525	530
Gray micaceous sandstone.....	530	550
White micaceous sandstone with some concretionary limestone and bits of coal.....	550	555
White micaceous sandstone and coal, with some fire clay, siderite, white limestone, much pyrite, and some calcite. <i>Productus</i> , <i>Edmondia nebrascensis</i> (?), <i>Hemipronitus crassus</i> , <i>Chonetes punctatus</i> (?), some small gasteropods, several crinoid spines and stems and a bryozoan like <i>Rhombopora</i> noted.....	555	560
Gray sandstone and coal, with some white limestone, pyrites, calcite, shale and a few crinoid stems.....	560	565
Dark gray shale, some coal, sandstone, pyrite and fire clay.....	565	570
Gray micaceous sandstone, with a little fire clay and shale.....	570	575
Gray micaceous sandstone, some of which is studded with spherules of pyrite measuring from 1 to 3 mm. in diameter, and showing faces of small cubic crystals on the surface.....	575	585
Gray micaceous shale.....	585	610
Gray micaceous shale and some siderite.....	610	615
Dark gray shale.....	615	620
Gray shale and some yellow limestone, concretionary siderite in large fragments and in minute spherules, coal and some sandstone .....	620	625
Gray micaceous shale, a little yellow limestone, siderite, pyrite and coal.....	625	630
Gray micaceous sandstone and shale with siderite, fire clay and coal .....	630	635
Gray micaceous sandstone and some shale.....	635	640
Gray micaceous sandstone.....	640	645
Gray micaceous sandstone, with some siderite.....	645	650
Gray micaceous shale and some yellow limestone, and fire clay....	650	655
Dark gray shale, some fire clay and concretionary siderite.....	655	660
Dark gray micaceous shale and a little yellow limestone and siderite .....	660	675
Dark gray micaceous shale.....	675	680
Dark gray and some micaceous black shale, with a little siderite..	680	685
Dark shale, with imprints of vegetation, and some fire clay.....	685	690
Dark shale and concretionary siderite.....	690	695
Dark micaceous shale and some siderite.....	695	700
Dark gray micaceous shale.....	700	715
Gray micaceous shale and some sandstone.....	715	725
Gray laminated sandstone and black shale.....	725	730
Dark shale, concretionary siderite and a little sandstone.....	730	735
Hard black shale.....	735	740
Black shale, some coal and sandstone and a little siderite.....	740	745
Gray micaceous shale, some yellow limestone, some black shale and a few bits of coal.....	745	750
Black shale and a few fragments of yellow limestone and coal.....	750	755
Black micaceous shale.....	755	760
Coal and a few pieces of black shale.....	760	765

*Logs—Continued.*

	Depth in feet.	
	From	To
Coal and black shale, some white limestone, a little sandstone siderite and bits of pyrite.....	765	770
Gray sandstone, some dark shale, bits of coal and limestone.....	770	775
Gray micaceous sandstone and a little yellow limestone.....	775	790
Dark micaceous shale and a little siderite.....	790	795
Black shale and a little coal. A little gray limestone noted.....	795	800
Black shale, a little coal and a little sandstone.....	800	805
Dark pyritiferous shale and some gray sandstone.....	805	815
Gray micaceous shale.....	815	820
Gray micaceous shale and a few bits of coal.....	820	825

No. 6.—*J. M. Drake, No. 23.*Location—NE.  $\frac{1}{4}$  sec. 9, Oblong Township.

Elevation—490 feet (estimated).

	Depth in feet.	
	From	To
Gray limestone, some yellow limestone and bits of shale.....	200	205
White and yellow limestone, concretionary siderite, some gray sandstone and a piece of quartz.....	205	210
Yellow and white limestone, gray sandstone, concretionary siderite and some dark shale.....	210	215
Gray sandstone, some yellow sandstone, siderite, quartz fragments, yellow limestone and a few pieces of bright green sandstone....	215	220
Yellow limestone, some siderite, shale and sandstone and red quartz (from drift?).....	220	225
White and yellow limestone and a few pieces of dark shale.....	225	230
White limestone.....	230	250
Very fine micaceous white sand and limestone.....	250	270
Dark gray micaceous sandy shale.....	270	275
Dark micaceous shale.....	275	285
Black shale and gray sandstone, with a little limestone.....	285	290
Dark limestone, some yellow limestone and bits of coal.....	290	295
Black shale, a little yellow limestone and a few fragments of coal	295	300
Gray shale, some yellow limestone and coal.....	300	305
Gray shale and some yellow limestone.....	305	310
Gray shale.....	310	315
Gray shale and some yellow limestone.....	315	320
Gray shale.....	320	330
Gray shale and a little yellow limestone.....	330	335
Gray micaceous shale and some micaceous sandy shale.....	335	340
Gray shale.....	340	350
Concretionary siderite with a little yellow limestone and shale. A Cyathophylid coral noted.....	350	355
Gray shale and a little yellow limestone.....	355	360
Gray shale, yellow limestone and some sandstone. The shale contains shreds of vegetation.....	360	365
Gray shale and concretionary siderite.....	365	370
Gray limestone and some gray shale.....	370	375
White limestone. A crinoid stem noted.....	375	380
White limestone, some greenish sandstone and a few bits of coal..	380	385
Gray micaceous sandstone and white limestone.....	385	390
Gray shale and a little limestone.....	390	395
White limestone and some gray shale.....	395	400
Gray shale and some limestone.....	400	405
Concretionary siderite, some dark shale, bits of coal and pyrite....	405	410
Gray sandy shale and siderite. Some yellow limestone.....	410	415
Dark gray shale, some siderite and yellow limestone.....	415	420
Gray sandy shale and some siderite.....	420	425
Gray sandy shale, black shale and some siderite.....	425	435
Gray micaceous sandstone and a few bits of yellow limestone.....	435	440
Gray micaceous sandstone.....	440	445
Gray micaceous sandstone with shreds of vegetation. A few small pieces of siderite.....	445	460
Gray micaceous sandstone and a few small pieces of white limestone.....	460	465
Gray micaceous sandstone with shreds of vegetation.....	465	470
Gray micaceous sandstone, some dark shale, a few bits of coal, and pyrite showing woody tissue.....	470	475
Gray micaceous sandstone and white limestone. A little dark shale noted.....	475	480
Gray sandy shale and yellow limestone.....	480	485
Gray sandy shale and white limestone. Some yellow limestone....	485	490
Sandstone with infiltrated lime, white limestone, and a few small spherical siderite concretions.....	490	495

*Logs—Continued.*

	Depth in feet.	
	From	To
Gray micaceous sandy shale, some yellowish limestone, white sandstone and a little dark shale.....	495	505
White sandstone, some dark shale and yellow limestone.....	505	515
Dark gray shale.....	515	520
Dark shale, fire clay, and some white limestone.....	520	525
Dark gray shale.....	525	530
Dark limestone, some dark shale, crinoid stems and some other organic material noted. Tuberculated-crinoid spine noted like that in S. G. McCleave well, 505-510, <i>Fusulina</i> noted.....	530	540
Dark limestone, coal, some yellow limestone and several crinoid stems noted.....	540	545
Gray micaceous sandstone and a few pieces of coal.....	545	550
Gray micaceous sandstone, a few bits of coal and siderite.....	550	555
Gray micaceous shaly sandstone, some siderite and a little limestone	555	560
Gray shale.....	560	565
Dark gray shale.....	565	570
Gray shale, some siderite and bits of pyrite.....	570	575
Gray shale and a little coal.....	575	580
Black shale and gray micaceous shale.....	580	585
Black micaceous shale and gray sandstone.....	585	590
Gray micaceous sandy and some black shale.....	590	595
Gray micaceous shale and black shale.....	595	600
Gray micaceous sandy shale and a little black shale.....	600	605
Gray micaceous sandstone and some siderite.....	605	610
Gray micaceous shale, some sandstone and siderite.....	610	615
Dark micaceous shale.....	615	620
Gray micaceous shale with shreds of vegetation.....	620	625
Gray sandy shale.....	625	635
Gray shale.....	635	640
Dark gray shale and some siderite.....	640	645
Dark gray shale, some siderite and yellow limestone.....	645	650
Dark shale, and siderite concretions.....	650	655
Dark shale, some siderite and a little white limestone.....	655	660
Gray shale.....	660	670
Gray sandstone, a few bits of pyrite and siderite.....	670	680
Gray sandstone.....	680	685
Gray sandy shale.....	685	690
Dark shale and gray sandy shale.....	690	695
Dark gray shale and some siderite.....	695	710
Dark gray shale.....	710	715
Dark shale and some siderite.....	715	725
Dark shale, and a little siderite.....	725	735
Dark shale, a little white sandstone and siderite.....	735	745
Dark shale and concretionary siderite.....	745	755
Dark shale.....	755	760
Black shale.....	760	765
Black shale and some sandstone.....	765	770
Gray micaceous sandstone and a little black shale.....	770	775
Gray shale and micaceous sandstone.....	775	780
Gray micaceous shale and little sand.....	780	785
Coal and gray shale.....	785	790
Gray shale, some fire clay, a little coal and bits of pyrite.....	790	795
Gray shale and some gray micaceous sandstone.....	795	800
Gray micaceous sandy shale and some gray shale.....	800	810
Gray micaceous shale.....	810	820
Gray sandy micaceous shale.....	820	825
Gray shale and concretionary siderite.....	825	830
Coal.....	830	835
Black carbonaceous shale and some gray shale.....	835	840
Black shale, gray sandstone and a little coal.....	840	845
White sandstone and a little white limestone.....	845	850
Dark shale and some white sandstone with infiltrated lime.....	850	860
Dark shale and some white sandstone with infiltrated lime.....	850	860
Dark shale, white sandstone, with infiltrated lime, some small		
Dark shale, white micaceous sandstone, and bits of coal.....	865	870
White micaceous sandstone.....	870	875
Dark shale and micaceous sandstone.....	875	880
Black micaceous shale, a little white limestone and a few bits		
tions.....	880	885
Gray micaceous shale.....	885	890
Hard black shale and a few pieces of white limestone.....	890	895
Gray sandstone and black shale. Small spherical siderite concretions and bits of pyrite.....	895	900
Black shale.....	900	905
Black shale and a very few pieces of white limestone.....	905	910
Black micaceous shale, white sandstone and some siderite concretions of coal.....	910	915
Black micaceous shale and a little limestone.....	915	920
White sandstone and dark shale.....	920	930



*Logs—Continued.*

	Depth in feet.	
	From	To
White micaceous sandstone containing carbonaceous shreds and a little black shale.....	930	935
Dark shale and some white micaceous sandstone.....	935	955
Like the preceding with a few bits of coal.....	955	960
Dark micaceous shale.....	960	965
White micaceous sandstone, some shale and a few bits of limestone .....	965	975
Gray micaceous shale, black shale and some sandstone.....	975	980
Gray shale and some sandstone.....	980	985
White micaceous sandstone and some dark shale.....	985	995
Gray micaceous sandy shale and a few pieces of white limestone..	995	1,005
Gray shale and some sandstone.....	1,005	1,010
Gray shale.....	1,010	1,020
Black shale and a little gray sandstone with infiltrated lime.....	1,020	1,030
Gray micaceous shale, some grayish green pieces of shale and a few bits of limestone.....	1,030	1,045
Dark shale and a little sandstone.....	1,045	1,050
Dark shale.....	1,050	1,055
Yellow micaceous sand.....	1,055	1,060
Yellow micaceous sand and some dark shale.....	1,060	1,065

No. 7—*J. E. Wilson, No. 21.*Location—W.  $\frac{1}{2}$  NW.  $\frac{1}{4}$  sec. 17, T. 7 N., R. 12 W., Robinson Township.

Elevation—490 feet (estimated).

	Depth in feet.	
	From	To
Dark gray shale, fine .....	200	205
Gray shale, fragments of concretions and coal .....	205	210
Shale, sandy, micaceous, light gray .....	210	215
Micaceous sandstone, light gray and of fine texture.....	215	220
Gray micaceous sandy shale .....	220	225
Laminated, dark and light gray micaceous shale .....	225	230
Gray, stony shale .....	230	245
Black shale and some gray shale .....	245	250
Gray shaly sandstone with infiltrated lime .....	250	255
Gray sandstone and shale .....	255	260
Gray sandstone, some limestone .....	260	265
Gray sandy shale, some limestone .....	265	270
Gray sandy shale and concretionary siderite, some limestone.....	270	275
Dark gray shale .....	275	280
Gray sandstone and yellowish sandstone with infiltrated lime.....	280	285
Coarse white sandstone, yellow micaceous sandstone and some gray shale .....	285	290
Coarse white sandstone and gray shale .....	290	295
White sandstone, some micaceous sandstone, little dark shale and limestone .....	295	300
Gray micaceous sandy shale, some gray shale .....	300	305
Gray micaceous sandy shale .....	305	310
Gray micaceous shale .....	310	320
Gray micaceous shale, some fragments of limestone .....	320	325
Dark gray shale, few bits of limestone .....	325	330
Dark gray shale and a few fragments of limestone and siderite..	330	335
Gray shale, siderite concretion, some bits of limestone and pyrite..	335	340
Dark gray and black shale .....	340	345
Gray shale, limestone and siderite concretions, some quartz grains	345	350
Gray micaceous sandy shale and black micaceous shale, a few bits of limestone .....	350	355
Gray micaceous sandy shale .....	355	360
Dark gray shale .....	360	370
White organic limestone, brecciated, crinoid stems. Rhombopora, lepidodendroides, ethyris, (?), and fragments of other brachiopods noted. One fragment with peculiar finely reticulate structure noted .....	370	375
Yellowish gray limestone, organic breccia .....	375	380
Red shale and gray shale, with some black shale .....	380	385
Fire clay, some fragments, of coal and green shale.....	385	390
Greenish gray shaly sandstone .....	390	395
Like the preceding, with some limestone .....	395	400
Light gray micaceous shale .....	400	405
Light gray sandy shale .....	405	410
Dark gray stony shale .....	410	425
Micaceous gray sandy shale, with a few fragments of coal.....	425	430
Micaceous sandy shale and shaly sand, laminated, showing shreds of vegetation .....	430	435

*Logs—Concluded.*

	Depth in feet.	
	From	To
Coarse gray sandstone with carbonaceous folla .....	432	439
Gray shale .....	439	445
Gray shale, micaceous .....	445	452
Coal, siderite concretions, pyrite crystals and a few white gypsum crystals .....	452	465
Gray micaceous shaly sandstone .....	465	471
Gray micaceous sandstone with infiltrated lime .....	471	478
Gray shale, gray sandstone .....	478	497
Coal, gray shale, dark limestone, pyrite and a few crinoid stems noted .....	497	504
Coal, pyrite, and a few crinoid stems noted .....	504	510
Coarse gray micaceous sandstone with infiltrated lime .....	510	523
Coarse gray micaceous sand .....	523	530
Gray micaceous sandy shale .....	530	536
Gray shale, fragments of coal and pyrite .....	536	543
Black shale, some limestone, and numerous crinoid stems noted..	543	549
Gray micaceous sandstone .....	549	556
Dark limestone with <i>Chonetes punctatus</i> . <i>Rhombopora lepidodendroides</i> and showing some intensely green specks. Presence of <i>Fusulina</i> uncertain .....	556	562
Coal, some limestone .....	562	569
Gray sandy shale, some pyrite .....	569	575
Gray sandy micaceous shale .....	575	582
Coarse gray sand with fragments of black shale .....	582	588
Gray sandstone with some limestone .....	588	595
Gray shaly sandstone .....	595	608
Gray shale and sandstone .....	608	621
Gray shale .....	621	666
Black and gray shale .....	666	673
Black shale .....	673	679
Brown limestone, greenish and reddish, dolomitic, shaly limestone, and black gray shale .....	679	686
Gray limestone, some gray shale and fragments of brown limestone, two small gasteropods .....	686	692
Coal, some gray and and brown limestone .....	692	699
Gray sandy micaceous shale .....	699	705
Gray shale .....	705	712
Gray sandy micaceous shale .....	712	725
Gray shale .....	725	731
Black shale .....	731	737
Black and gray shale .....	737	743
Black stiff shale .....	743	750
Coal, some gray shale .....	750	756
Coarse gray sandstone with infiltrated lime, fragments of coal, and gray shale .....	756	763
Gray sandy micaceous shale .....	763	769
Black shale, coarse gray sandstone, fragments of coal .....	769	775
Gray sandy shale, black shale .....	775	781
Gray micaceous shale, gray sandstone with infiltrated lime .....	781	787
Gray shale and gray micaceous shale .....	787	793
Gray shale .....	793	806
Black stiff shale .....	806	813
Coal, and fire clay .....	813	820
Gray shale .....	820	834
Gray micaceous sand and shale .....	834	840
Yellow micaceous sand .....	840	846
Gray shale .....	846	862
Gray shale with fragments of gray sandstone .....	862	873
Gray and black shale .....	873	884
Black shale .....	884	895
Gray shale .....	895	906
Gray sandstone with shreds of vegetation and a few fragments of coal .....	906	912
Gray sandstone with shreds of vegetation .....	912	923
Gray micaceous sandstone .....	923	928
White micaceous sand with fragments of shale .....	928	934
Gray laminated sandstone .....	934	940
Gray laminated sandstone, brown sandstone .....	940	952
Brown sandstone (note on sack "Oil 952 to 973"), gray sandstone .....	952	958
Brown sandstone, some gray sandstone .....	958	964
Brown sandstone, some gray sandstone, pyrite .....	964	970
Brown sandstone, some gray sand .....	970	975

## STRATIGRAPHY.

*Pleistocene.*

The records in Plate II give an idea of the difference in thickness of the drift overlying the hard rocks. Some records show it to be thin, due

to conditions of erosion and deposition. The drift, measures from 25 to 110 feet in the examined logs; while a number of logs over the field show an average of 75 feet to the bed rock, on which the drive-pipe is set.

### *Pennsylvanian.*

The Pennsylvanian or "Coal Measures" rocks are separable into three divisions; an upper part, the McLeansboro formation, middle part, the Carbondale formation, and a basal part, the Pottsville formation.

*McLeansboro Formation*—The rocks of the McLeansboro formation lie between the top of Herrin (No. 6) coal and bed rock near the surface. From measurements and estimates of logs in the section the average thickness of the formation is found to be about 485 feet. Shales and sandstones dominate in this division and are accompanied by several streaks of limestone and many coals. One well reports seven beds of coal. The most conspicuous bed of these rocks is the limestone used as a key line in the section. Dr. Udden describes it as a dark limestone containing *Fusulina* fossils. All of the records show notations of *Fusulina* except Nos. 2 and 3. The position of the bed is estimated in No. 2 by comparison with No. 1 and is thought to lie at a depth of about 560 feet. The black limestone at 490 feet in No. 3, although no *Fusulina* are reported, seems to correlate with other logs of the section and is designated as that horizon. An effort is being made by geologists to determine this bed over Illinois by its fossils and thus procure a definite marker for the Herrin (No. 6) coal immediately underneath.

The two limestones noted at 200 and 300 feet by Dr. Udden, in well No. 2, page 35; and alluded to as possibly equivalent to the limestone 160 feet above No. 6 coal at Belleville and the Carlinville limestone, suggest their possible correlations through the columnar section. The interval between the two limestones is about 130 feet. The interval between the upper or Carlinville (?) limestone and the "*Fusulina*" limestone is about 365 feet and the interval between the lower limestone and the key bed is about 220 feet. In other sections of the State, the Carlinville limestone is about 250 feet above the overlying limestone of the Herrin coal. The red shale spoken of elsewhere as lying in the McLeansboro is reported only in logs No. 4 and 7 at depths of 270 and 380 feet respectively. The intervals between the red bed and the "*Fusulina*" limestone are respectively 210 and 160 feet.

*Carbondale Formation*—The rocks of the Carbondale formation lie between the tops of Herrin (No. 6) and Murphysboro (No. 2) coals. The Herrin coal is the first beneath the "*Fusulina*" limestone. The Murphysboro coal lies above the Pottsville sandstones and is usually separated from these by shales or a thin limestone. The Carbondale formation is mostly shale, with sandy shales at the bottom. There are either three or four coals noted in each record. The columnar section shows much irregularity between the Herrin and the lowest coal. The thickness of the division varies from 200 to 450 feet. Logs 1, 2, 3, 7 and 8 show an average interval of 310 feet between the Herrin coal and the Pottsville. In type localities of other sections of Illinois, the interval is between 300 and 350 feet.



**Pottsville Formation**—The Pottsville rocks are the lowest members of the Pennsylvanian and are essentially coarse sandstones merging into sandy shales at the top and occasionally split with lenses of shale. The lower portions of the records used in the columnar section are predominantly sandstones and in position correspond with Pottsville beds. These rocks lie below the Murphysboro (No. 2) coal. The sandstone at the base of the sections is known as the Robinson sand. There are as many as four distinct lenses of this sand interbedded with shale. The upper portion of the sand rocks are oil-bearing but lower down they yield much salt water.

### LAWRENCE COUNTY.

The explored rocks of Lawrence County lie in the Pennsylvanian and Mississippian series. These major divisions are overlain with unequal thicknesses of drift. The Pennsylvanian rocks are from 800 to 1,300 feet thick. This great variation in thickness is due to the unconformity at the top of the Mississippian, accentuated by preexisting structure and preglacial erosion. The Mississippian rocks are not completely penetrated but they have been well explored to a depth of 475 feet below their top.

The columnar section, Plate IIIA, is made up of logs from all sections of Lawrence county. They are plotted in order from south to north. The top of the wide-spread Ste. Genevieve limestone, known locally as the McClosky sand, is used as a key bed through the columnar section. All records are plotted with respect to this line. The section is made up of the following records, which correspond by number to those printed on Plate 3.

### LOGS.

#### No. 1.

**Operators**—Snowden Bros.

**Farm and well**—Laughlin, No. 1.

**Location**—SE.  $\frac{1}{4}$  sec. 32, Lukin Township.

**Elevation**—469 feet.

	Thickness Feet	Depth Feet
Sand and clay, yellow, soft .....	20	20
Slate, white .....	15	35
Limestone shell .....	3	38
Slate, white .....	7	45
Limestone shell .....	3	48
Slate, white .....	12	60
Sand, loose, (water) .....	9	69
Slate, white .....	66	135
Limestone shells .....	5	140
Shale, black .....	40	180
Limestone shell .....	2	182
Slate, black, loose .....	18	200
Limestone shell, white .....	4	204
Slate .....	56	260
Sand, white loose (hole full of water, 290 feet) .....	30	290
Limestone .....	21	311
Slate, black and white .....	89	400
Limestone shell, white .....	4	404
Sandy limestone, white, (water, 410 feet) .....	6	410
Limestone shell, white .....	12	422
Slate, black .....	5	427
Limestone shell, gray .....	11	438
Red rock .....	7	445
Slate, white .....	55	500
Shale and slate, black .....	105	605

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*Logs—Continued.*

	Thickness Feet	Depth Feet
Sandy slate, white .....	21	626
Limestone shell .....	6	632
Shale, brown .....	58	690
Limestone shell .....	3	693
Slate, white .....	17	710
Shale, brown, hard .....	20	730
Slate, white, soft .....	50	780
Limestone shell, white .....	2	782
Slate, white .....	48	830
Sand, white, (salt water, 830 feet) .....	42	872
Broken lime, black, loose .....	5	877
Shale, black .....	3	880
Limestone shell, white .....	5	885
Slate, black, soft .....	55	940
Sand, brown, bridged .....	5	945
Slate, white .....	35	980
Slate and shale, black .....	96	1,076
Limestone and sand, (water, 1,086 feet) .....	10	1,086
Shale, black .....	10	1,096
Limestone, white .....	29	1,125
Slate, black .....	31	1,156
Sand and broken limestone, white, soft .....	24	1,180
Sandy slate, white .....	35	1,215
Slate, white, soft .....	20	1,235
Sandy shale .....	65	1,300
Limestone, white, hard .....	4	1,304
Sand, white, soft .....	11	1,315
Sandy clay, brown .....	23	1,338
Limestone, white .....	7	1,345
Slate, black .....	95	1,440
Limestone, white .....	10	1,450
Slate, white, soft .....	56	1,506
Sand, brown, (show of oil, 1,506 to 1,514 feet) .....	8	1,514
Limestone, white .....	100	1,614
Sand, (water) (show of oil, 1,705 to 1,732 feet) .....	118	1,732
Limestone .....	13	1,745
Slate .....	5	1,750
Sand, (hole full of water, 1,775 feet) .....	25	1,775
Slate .....	57	1,832
Limestone .....	18	1,850
Slate .....	15	1,865
Red rock .....	5	1,870
Limestone shell .....	5	1,875
Slate .....	20	1,895
Limestone .....	5	1,900
Slate .....	20	1,920
Red rock .....	10	1,930
Slate .....	55	1,985
Sand, (oil show, 1,985 to 2,000 feet) .....	15	2,000
Shale, hard, black .....	12	2,012
Slate .....	18	2,030
Limestone .....	70	2,100
Slate .....	30	2,130
Limestone .....	22	2,152
Sand, (show of oil) .....	4	2,156
Slate .....	4	2,160
Limestone .....	5	2,165
Total depth .....		2,165

*No. 2.*

Operators—Ohio Oil Company.

Farm and well—W. H. Snyder, No. 7.

Location—SW.  $\frac{1}{4}$  NW.  $\frac{1}{4}$  sec. 25, Dennison Township.

Elevation—495 feet.

(This record was compiled by Dr. J. A. Udden from an examination of well samples.)

	Depth in feet.	
	From	To
Loess .....	1	5
Loess, silty .....	5	20
Gray sandy limestone and micaceous and calcareous sand. Spher- ules of pyrite noted, measuring from $\frac{1}{4}$ to 1 mm. in diameter..	20	25
Micaceous gray sandstone with occasional shreds of carbonaceous material .....	25	35
Sandy shale .....	35	40

*Logs—Continued.*

	Depth in feet.	
	From	To
Gray shale.....	40	45
Gray sandstone, coal, black shale and pieces of gray limestone. There were crinoid stems, one crinoid plate from a calyx and an umbo of a small brachiopod.....	45	50
Light gray shale of fine texture. No effervescence.....	50	55
Gray calcareous and sandy rock, with much concretionary calcare- ous material. One large fragment was black concretionary limestone with imbedded minute white shells and tubes, appar- ently small gasteropods or formanifera .....	55	60
Shaly sandstone, some shale, white and yellow limestone of con- cretionary appearance, and some coal.....	60	65
Sandy shale of very light gray color.....	65	70
Dark gray micaceous shale.....	70	90
Dark shale and black shale, fragments of concretionary limestone, Nucula beyrichi (?) crinoid stems, tubes of Ammodiscus, and fragments of concretionary limestone.....	90	100
Black shale.....	100	105
Black shale, black calcareous "clod," occasional pieces of coal, crinoid stems, "mineral charcoal" showing woody structure, pyrite and calcite.....	105	110
Gray sandy micaceous shale.....	110	120
Gray micaceous sandstone.....	120	140
Gray sandy shale, black shale and coal, with some calcareous material .....	140	145
Gray sandy and micaceous shale.....	145	155
Fine gray sand.....	155	165
Fine gray shaly sand.....	165	170
Fine gray shaly sand with dark shaly laminae.....	170	175
Laminated shaly sandstone.....	175	180
Laminated gray sandy shale.....	180	185
Dark micaceous and sandy shale.....	185	195
Dark shale, micaceous.....	195	200
Sandy shale and sandstone.....	200	205
Coarse, micaceous gray sand.....	205	215
Micaceous gray shale.....	215	225
Dark shale of fine texture.....	225	230
Dark shale, black shale, some sandstone, impure coal, and frag- ments of limestone, yellow. Crinoid stems and a small gas- teropod noted.....	230	235
Fire clay, sandy shale, and concretionary yellow limestone, which is fossil-bearing. A few fragments of coal noted.....	235	240
Gray shale.....	240	245
Gray stony shale.....	245	250
Dark micaceous shale.....	250	255
Gray micaceous shale.....	255	260
Dark micaceous shale.....	260	265
Gray shaly sandstone and sandy shale.....	265	270
Gray micaceous sand of fine texture.....	270	310
Gray sand and some lumps of light fire clay or shale containing imprints of leaves.....	310	315
Clean and white micaceous sand.....	315	320
Gray micaceous sandstone.....	320	335
Light gray fire clay, coal, some sandstone, and a little limestone. Minute spherules of siderite present in the fire clay.....	335	340
Cream-white limestone of fine granular homogeneous texture, with occasional minute green specks, and occasional indistinct organic fragments .....	340	345
White limestone of fine uniform texture. Some fragments show a fine reticulate, clastic (?) structure. Some greenish shale and pyrite .....	345	350
Brownish red marly clay and limestone.....	350	355
Red marl, greenish marl, and white limestone.....	355	360
White limestone of fine uniform texture, with a few fragments of gray shaly limestone .....	360	365
Gray sandstone, bititic and impregnated with irregular kernels and layers of yellow limestone.....	365	370
Some sandstone, some white limestone, yellow lime and some frag- ments of a slowly effervescing material.....	370	375
Dirty dark marl and limestone, with some fragments of bright red marl, and some black fragments.....	375	380
Gray sandstone.....	380	385
Very dark shaly sandstone, bituminous and green shale.....	385	390
Dark, almost black, sandy micaceous shale.....	390	400
Dark gray shale of fine texture.....	400	405
Gray micaceous shaly sandstone and some white limestone.....	405	410
Dark gray shale of fine texture, coal .....	410	415
Dark gray shale of fine texture and some white limestone.....	415	425
Gray micaceous laminated sandstone.....	425	430

*Logs—Continued.*

	Depth in feet.	
	From	To
Dark gray shale and some brown clay.....	430	435
Dark gray sandstone with layers of carbonate of iron.....	435	440
Dark gray micaceous shale, and dark gray sandstone with layers of carbonate of iron.....	440	445
Dark gray micaceous shale; dark gray sandstone with layers of carbonate of lime, and a few fragments of limestone.....	445	450
Dark gray shale, siderite and pyrite.....	450	455
Dark gray shale of fine texture and some siderite.....	455	460
Dark gray micaceous shale, and gray sandstone with layers of carbonate of iron.....	460	470
Dark gray shale, sandstone, and sandstone with carbonate of iron	470	475
Dark gray shale of fine texture and some siderite.....	475	480
Dark gray micaceous shale, and some siderite.....	480	485
Dark gray shale, dark micaceous shale, and siderite.....	485	495
Dark gray shale, white and dark limestone.....	495	500
Siderite concretions showing cracks filled with calcite, gray limestone and shale.....	500	505
Gray shaly sandstone, siderite concretions and some gray limestone .....	505	510
Gray shaly sandstone, fragments of white and gray limestone....	510	515
Gray sandy shale, siderite and fragments of gray limestone....	515	520
Dark gray shale, some greenish shale, siderite, and fragments of gray limestone.....	520	525
Dark gray micaceous shale, and some siderite.....	525	530
Dark gray shale, some greenish shale and some siderite.....	530	535
Dark shale, siderite and some brown limestone.....	535	540
Dark shale, siderite, fragments of limestone, and a part of a crinoid stem noted.....	540	545
Dark shale and fragments of limestone.....	545	560
Black shale with organic calcareous fragments. Crinoid stems and Rhombopora lepidodendroides noted. Spherules of siderite present. Spines of Productus (?).....	560	565
Black shale with organic calcareous material, limestone, fragments of gray micaceous sandstone, numerous crinoid stems noted, also siderite. Hustedis, Chonetes punctatus, Rhombopora lepidodendroides, gasteropods and crinoid stems noted, as also spines of Productus (?).....	565	570
Black shale with calcareous material, fragments of limestone and sandstone, small gasteropods, numerous crinoid stems, and spines of producti noted.....	570	575
Coal, gray shale, limestone, numerous crinoid stems and pyrite noted .....	575	580
Brownish dark limestone, gray shale, and fragments of coal. Considerable pyrite, fossil wood in fragments.....	580	585
Brownish dark limestone, gray shale, some crinoid stems and Chonetes noted.....	585	590
Gray micaceous shale, gray shale, gray limestone and brown limestone .....	590	595
Gray sandy shale, fragments of brown and gray limestone.....	595	600
Dark gray shale of a fine texture and some pyrite.....	600	605
Dark gray shale of a fine texture, some gray micaceous shale, pyrite and fragments of coal.....	605	610
Dark gray shale of a fine texture.....	610	620
Dark gray micaceous shale.....	620	625
Dark gray shale and fragments of limestone.....	625	630
Dark gray micaceous shale and some pyrite.....	630	635
Dark gray shale, fragments of coal and limestone.....	635	640
Dark gray shale, fragments of limestone and some pyrite.....	640	645
Light gray sandstone of fine texture, and fragments of black shale .....	645	650
Light gray sandstone, and some fragments of black shale.....	650	660
Dark gray shale and light gray sandstone.....	660	665
Light gray micaceous fine sand.....	665	680
Fine white micaceous sand with infiltrated lime.....	680	685
Fine white micaceous sand and some dark gray shale.....	685	695
Fine gray micaceous sand with infiltrated lime.....	695	700
Dark gray shale and gray sandstone.....	700	705
Gray micaceous laminated sandstone.....	705	710
Coal, some gray shale, and a few fragments of limestone.....	710	715
Gray micaceous laminated sandstone and some coal.....	715	720
Micaceous sandstone.....	720	725
Dark gray shale.....	725	730
Black shale of fine texture.....	730	735
Very dark stony shale of fine texture.....	735	740
Gray micaceous sandstone, some black shale and fragments of white limestone.....	740	745
Gray micaceous sandstone, soft and containing calcareous material .....	745	750

*Logs—Continued.*

	Depth in feet.	
	From	To
Micaceous sandstone.....	750	755
Dark shale, sandstone, coal, with some limestone fragments.....	755	760
Fire clay, black shale, coal, sandstone, a few fragments of limestone, yellow siderite, spherical concretions, measuring from $\frac{1}{4}$ to 2 mm. in diameter.....	760	770
Dark shaly clay and micaceous clay, with coal, sandstone, and small spherical concretions of siderite.....	770	775
Dark clayey shale and some micaceous and sandy shale.....	775	780
Gray clayey shale of fine texture with some stony and micaceous shale .....	780	790
Dark gray shale, in part sandy, in part of fine texture. Much pyrite, some pyritized wood coal and "mineral charcoal".....	790	795
Light gray shale or fire clay.....	795	800
Light gray fire clay, white sandstone, coal and some fragments of white and yellow limestone.....	800	805
Gray clay shale or fire clay, coal, and white sandstone.....	805	810
Fire clay, sandy gray shale, black shale, coal and brown siderite..	810	815
Soft gray micaceous sandstone, with thin carbonaceous laminae black shale, brown siderite, pyrite and some fragments of fissured white limestone.....	815	820
Black shale containing calcareous organic fragments, and gray sandstone containing thin layers of shaly material, pyrite and spherules of gray lime measuring about $\frac{1}{2}$ mm. in diameter....	820	825
Dark shale and greenish gray sandy fire clay.....	825	830
Gray micaceous sandstone, fire clay and black shale with white limestone. Crinoid stems noted.....	830	840
Black shale and gray micaceous sandstone, brown siderite and white limestone and partly pyritized mineral charcoal.....	840	845
Gray micaceous sandstone, laminated, gray marly shale.....	845	850
Laminated dark shale and sandstone, with a few fragments of coal, apparently from thin seam in rock.....	850	855
Gray sandstone and sandy shale, with black shale, impure coal and siderite.....	855	860
Like the preceding but with some pure coal.....	860	865
Gray shale, fire clay, gray sandstone, and coaly black shale.....	865	870
Fire clay, gray shale, coal, brown siderite, white limestone, fragments of shells and crinoid stems, pyrite giving an oily film on the water when washed.....	870	875
Gray clayey shale, and coal, with some calcareous material.....	875	880
Like the preceding. Crinoid joints noted.....	880	885
Gray clayey shale, containing fragments of coal and of limestone, and also some mica.....	885	900
Mostly fire clay, greenish gray, some gray sandstone, black shale, a little coal, and much pyrite. Fragments of shells and of limestone noted. In the fire clay a joint was filled with a thin film of black bituminous or carbonaceous material.....	900	905
Gray laminated micaceous sandstone.....	905	915
Dark gray, sandy and micaceous shale.....	915	920
Gray micaceous sandstone and dark shale.....	920	925
Gray sandstone, greenish fire clay and coaly black laminated shale .....	925	930
Gray laminated sandstone, black shale, some pieces of acereous shale, brown siderite, fragments of white limestone.....	930	935
Sandstone, from dark to light gray, and showing streaks of carbonaceous material, together with black coaly shale.....	935	940
Greenish gray fire clay, containing spherules of fire clay from $\frac{1}{4}$ to $\frac{1}{2}$ mm. in diameter, and having thin joints filled with bituminous or carbonaceous material. Some sandstone and shale noted.....	940	945
Greenish gray fire clay, with fractures.....	945	950
Dark shale of fine texture.....	950	955
Gray coarse sand with a faint odor of petroleum. It floats on water .....	955	960
Black and dark shale, with some carbonaceous layers.....	960	965
Dark and black shale and concretionary siderite and white limestone .....	965	970
Minutely black and light gray limestone.....	970	975
Minutely blotched dark gray limestone and some dark shale.....	975	980
Dark clayey shale.....	980	990
Black shale and gray sandstone.....	990	995
Black coaly shale with brownish streak and containing streaks of brown flaky siderite, greenish gray fire clay, gray limestone and stony fire clay filled with minute spherules of siderite....	995	1,000
Black and gray shale and a fragment of coal.....	1,000	1,005
Coarse quartz sandstone with fragments of siderite.....	1,005	1,010
Gray sandstone with siderite grains.....	1,010	1,015
Gray sandstone with many grains of brown siderite.....	1,015	1,020
Fairly coarse gray sand.....	1,020	1,030
Fine gray sand having the odor of petroleum.....	1,030	1,035



*Logs—Continued.*

	Depth in feet.	
	From	To
Fine gray and with some black and gray shale, white limestone, some yellow and brown siderite.....	1,035	1,040
Gray sandstone, some coarse with black and brown grains, some laminated, alternating with black micaceous shale.....	1,040	1,045
Black shale, some sandstone, and some white limestone.....	1,045	1,050
Black stiff shale, some clayey shale and white limestone.....	1,050	1,060
Black shale and fire clay with a few fragments of coal.....	1,060	1,065
Black shale, and some white limestone.....	1,065	1,075
Black shale, some pyrite and white limestone.....	1,075	1,080
Black shale and some pyrite.....	1,080	1,085
Gray sandstone with imbedded siderite spherules and shreds of carbonaceous material.....	1,085	1,090
Gray sandstone of fine texture.....	1,090	1,100
Gray sandstone of fine texture with some dark gray shale.....	1,100	1,105
Gray sandstone of fine texture.....	1,105	1,110
Gray sandstone with some fragments of white limestone.....	1,110	1,115
Laminated shaly sandstone, consisting of layers of dark sandy shale and light gray sandstone.....	1,115	1,120
Laminated sandstone and shale.....	1,120	1,130
Green and black fire clay of fine texture and cut by joints.....	1,130	1,140
Greenish blotchy very dark fire clay, with siderite concretions in large fragments, and some very red clay lumps with green core	1,140	1,145
Very dark, almost black, fire clay.....	1,145	1,150
Very dark, almost black, fire clay, or a greenish tinge, some bright red clay showing green streaks, some white limestone and some coal or bituminous substance.....	1,150	1,155
Very dark fire clay.....	1,155	1,160
Dark fire-clay-like shale.....	1,160	1,165
Black stiff shale and fragments of siderite concretions.....	1,165	1,170
Black shale and dark green shale.....	1,170	1,185
Black shale and gray shale, with some white sandstone and fragments of siderite concretions.....	1,185	1,190
Black shale.....	1,190	1,195
Black shale with some fragments of siderite.....	1,195	1,200
Dark gray shale of fine clay-like texture.....	1,200	1,205
Laminated white and black sandstone. The laminae are thin....	1,205	1,215
Dark shale.....	1,215	1,220
Dark shale with some sandstone.....	1,220	1,225
Dark shale.....	1,225	1,235
Dark sandy shale and laminated sandstone.....	1,235	1,240
Dark shale.....	1,240	1,245
Dark sandy shale and white, fine-grained sandstone, apparently in laminae. Also some fragments of white limestone.....	1,245	1,255
Gray shale, greenish fire clay, some coal and a little nodular limestone .....	1,255	1,260
Gray shale and dark shale, some yellow siderite, some white limestone and a few fragments of coal. Bituminous joints....	1,260	1,270
Gray shale, black shale, white sandstone of fine texture and white limestone.....	1,270	1,280
Gray shale, considerable white limestone, and white sandstone of fine compact texture.....	1,280	1,285
Black shale and white fine-grained sandstone with some limestone	1,285	1,290
Fine-grained, hard white sandstone, gray, sandy shale and white limestone .....	1,290	1,295
Micaceous gray sandstone, black shale, and some pieces of white limestone .....	1,295	1,300
Dark gray shale, white fine-grained sandstone, and some fragments of white limestone.....	1,300	1,305
Light gray micaceous sandstone, gray shale and some fragments of white limestone.....	1,305	1,310
Dark gray shale, laminated sandstone and some limestone.....	1,310	1,315
White, fine-grained sandstone, gray shale, white limestone and some pyrite.....	1,315	1,320
Sand, fairly coarse.....	1,320	1,325
Yellow rusty sand.....	1,325	1,340
Yellow rusty sand with some shale.....	1,340	1,345
Laminated gray sandstone of fine texture.....	1,345	1,355
Fine sand, with some shale and calcareous material.....	1,355	1,360
Fine sand and shale, with some carbonate of lime.....	1,360	1,365
Fine sand and shale.....	1,365	1,370
Dark gray shale and sand.....	1,370	1,380
Sand, gray shale and black shale.....	1,380	1,405
Greenish gray fire clay, some dark shale, considerable pyrite, and sand (from above).....	1,405	1,410
Greenish gray fire clay, much pyrite, a few fragments of rock containing organic calcareous fragments and some sand.....	1,410	1,415
Dark greenish gray shale, some fragments of black shale and pyrite .....	1,415	1,420



*Logs—Continued.*

	Depth in feet.	
	From	To
Sand of fine texture and dark greenish gray shale or fire clay with much pyrite.....	1,420	1,425
Dark green fire clay or shale, very much pyrite and fragments of coal, evidently from a thin seam.....	1,425	1,430
Dark greenish gray fire clay, pyrite and fragments of impure coal	1,430	1,435
Dark green fire clay and dark shale with some coal.....	1,435	1,440
Very dark shale, thin splitting and dark green fire clay.....	1,440	1,445
Very dark shale, dark green fire clay, a little coal and pyrite.....	1,445	1,470
Dark green fire clay and dark shale, pyritiferous.....	1,470	1,480
Dark green fire clay-like shale .....	1,480	1,495
Dark green fire clay-like shale, with much pyrite, and some coal in thin seams.....	1,495	1,500
Dark green fire clay-like shale .....	1,500	1,510
Dark green fire clay-like shale, some black bituminous shale with thin laminae of coal, and with pyrite.....	1,510	1,515
Dark green fire clay-like shale, dark gray shale, "Coal Measure"-like, with pyrites.....	1,515	1,520
Dark green fire clay-like shale, and dark gray shale with pyrite..	1,520	1,535
Brownish red marl, some fire clay-like greenish shale, some pyrite and some fragments of white limestone. The red marl and the limestone have the aspect of the Chester.....	1,535	1,540
Brownish red shale, pyrite and fragments of white limestone.....	1,540	1,545
Red marly shale, gray marly shale and white limestone.....	1,545	1,565
Dark gray shale and marl.....	1,565	1,570
Dark gray stony marl and fragments of white limestone, with crinoid stems.....	1,570	1,590
Gray marl and red marly shale with fragments of white limestone	1,590	1,595
Gray, green and red shale, white limestone, sandy limestone, pyrite and crinoid stems.....	1,595	1,615
Greenish gray calcareous shale.....	1,615	1,635
Dark green, stony calcareous shale.....	1,635	1,640
Dark gray shale, organic, fragmental limestone, dirty specked gray .....	1,640	1,645
Shale and limestone.....	1,645	1,650
Gray marly shale and organic fragmental limestone Oily.....	1,650	1,655
Organic fragmental limestone and some shale. Oily.....	1,655	1,660
Dark gray shale, green shale, red shale and organic fragmental limestone. Oily.....	1,660	1,665
Like the preceding with less limestone.....	1,665	1,680
Red marly shale and green laminated shale.....	1,680	1,685
Red marly shale and dark green shale.....	1,685	1,695
Gray marly shale, gray sandstone of fine texture and some organic fragmental limestone.....	1,695	1,700
Gray marly shale.....	1,700	1,730
Fine gray quartz sand showing a few mica scales (and effervescing) .....	1,730	1,775
Fine-textured gray sand with some shale.....	1,755	1,760
Fine-textured gray sand with some gray shale.....	1,760	1,765
Gray marly shale and sand.....	1,765	1,775
Fine-textured gray sand, dark gray shale, with some fragments of limestone showing joints filled with black bituminous films..	1,775	1,780
Gray marly shale and fine sand.....	1,780	1,785
Earthy black marly shale filled with bitumen.....	1,785	1,795
Partly like the preceding, partly gray stony marl.....	1,795	1,800
Gray marly shale and fine sand.....	1,800	1,805
Like the preceding with some very thin-splitting black shale....	1,805	1,810
Black shale and fine gray sand.....	1,810	1,820
Gray marly shale, and some black bituminous material shining on conchoidally fractured surfaces Fractures and fuses in flame..	1,820	1,825
Gray marly shale.....	1,825	1,830
Gray marly shale, with a black bitumen showing conchoidal, shiny cleavage.....	1,830	1,835
Gray marly shale with a few small fragments of bitumen.....	1,835	1,840
Gray marly shale.....	1,840	1,850
Gray marly shale, with some fine micaceous sand, and showing black streaks.....	1,850	1,860
Gray marly shale.....	1,860	1,865
Almost black and dark, greenish gray, marly, sandy shale, showing red streaks, and a dark greenish sand of fine texture. Mica noted. Oily.....	1,865	1,880
Dark, greenish gray fire clay-like shale. Oily.....	1,880	1,885
Dark greenish-gray shale and sandy rock, and some red shale appearing earthy, from bitumen.....	1,885	1,890
Green and red shale, with some fragments of sandstone and some organic limestone. Oily.....	1,890	1,910
Oolitic limestone, and green shale.....	1,910	1,915
Oolitic limestone, other limestone, green shale and some red shale. A small <i>Dielasma</i> noted. The dark green shale splits into very thin fragments.....	1,915	1,920

Logs—Continued.

	Depth in feet.	
	From	To
Green shale, dark shale, red shale, and oolitic limestone.....	1,920	1,930
Green shale, red shale, and some dirty looking limestone and oolite. Crinoid stem noted.....	1,930	1,945
Mostly iron rust from bit or casing.....	1,945	1,950
Limestone with a great deal of rust.....	1,950	1,955
Granular limestone with some well-rounded quartz sand, and some oolitic grains.....	1,955	1,960
Granular limestone, gray.....	1,960	1,965
Coarse oolitic limestone, with some quartz grains.....	1,965	1,970
An organic breccia, with imbedded oolitic grains, and some quartz grains .....	1,970	1,980
Organic fragmental limestone, with oolitic spherules, and with a few fragments of chert.....	1,980	1,995
Limestone, fragmental, oolitic.....	1,995	2,000

No. 3

Operators—Snowden Bros.  
Farm and well—H. K. Seed, No. 3.  
Location—NW. ¼ sec. 29, Bridgeport Township.  
Elevation—513 feet.

	Thickness Feet	Depth Feet
Soil, yellow .....	23	23
Slate, dark .....	17	40
Sand, white (12 bailers of water, 75 feet) .....	35	75
Slate, dark .....	65	140
Limestone, white .....	6	146
Slate, dark .....	90	236
Sand, white .....	49	277
Slate, dark .....	6	283
Limestone shell .....	5	288
Coal .....	6	294
Slate, dark .....	36	330
Limestone, light .....	15	345
Slate, light .....	63	408
Sand, light .....	31	439
Limestone, light .....	10	449
Red slate, light .....	6	455
Slate, light .....	155	610
Sand, light, hard .....	13	623
Slate, dark .....	17	640
Sand, light .....	15	655
Slate, dark .....	20	675
Limestone, dark .....	12	687
Slate, light .....	33	725
Slate, dark .....	57	782
Sand, light, hard .....	13	795
Slate, light .....	13	808
Coal .....	4	812
Slate, light .....	38	850
Slight, dark .....	12	862
Limestone, dark .....	4	866
Slate, dark .....	24	890
Sand, light (hole full of water, 905 feet) .....	35	925
Limestone and sand, light, hard .....	15	940
Slate, black, soft .....	20	960
Slate, light .....	45	1,005
Limestone, light .....	5	1,010
Slate .....	30	1,040
Sand .....	50	1,090
Slate .....	40	1,130
Sand, (hole full of water, 1,140 feet) .....	252	1,382
Slate, dark .....	2	1,384
Sandy limestone, light .....	41	1,425
Slate, black .....	2	1,427
Limestone, light .....	23	1,450
Sand and coal .....	17	1,467
Slate, dark .....	2	1,469
Sand and shells .....	1	1,470
Slate, dark .....	48	1,518
Sand, light, hard (water) .....	73	1,591
Slate, dark, soft .....	17	1,608
Sandy limestone, light .....	32	1,640
Sand, light, hard (hole full of water, 1,640 feet).....	47	1,687

## Logs—Continued.

	Thickness Feet	Depth Feet
Slate, dark	16	1,703
Sand, dark	22	1,726
Limestone, light	4	1,730
Red rock	6	1,734
Slate	31	1,765
Limestone	21	1,786
Slate	7	1,793
Limestone	10	1,803
Red slate	7	1,810
Sand (water, 1,823 feet)	13	1,823
Slate	10	1,833
Limestone	20	1,853
Slate	12	1,865
Sand (water, 1,873 feet)	7	1,872
Red slate	6	1,878
Slate	12	1,890
Red slate	4	1,894
Sand (water, 1,916 feet)	22	1,916
Slate	6	1,922
Sand (hole full of water, 1,947 feet)	25	1,947
Slate	32	1,980
Limestone	2	1,982
Sand (oil pay, 1,982 to 1,995 feet)	19	2,001
Total depth		2,001

## No. 4.

Operators—Snowden Bros.

Farm and well—O'Donnell, No. 28.

Location—SE  $\frac{1}{4}$  sec. 17, Bridgeport Township.

Elevation—498 feet.

	Thickness Feet	Depth Feet
Sand and mud	129	129
Slate, light	31	160
Sand, white (10 barrels water, 235 feet)	165	325
Slate, dark	10	335
Limestone shell, hard	11	346
Red rock	9	355
Slate, light	120	475
Slate, dark	85	560
Slate, white	60	620
Slate, dark	100	720
Slate, dark	15	735
Slate (4 barrels of water, 750 feet)	45	780
Slate	25	805
Slate	10	815
Limestone	40	855
Slate shell	6	861
Slate	60	921
Slate shell, hard, gray	4	925
Slate	37	962
Slate, hard (oil, 970 feet; water, 990 feet)	84	1,046
Slate	2	1,050
Slate, soft	20	1,070
Slate	25	1,095
Slate	40	1,135
Slate	15	1,150
Slate	25	1,175
Slate	16	1,191
Slate, light	12	1,203
Slate	25	1,228
Slate	9	1,236
Slate	44	1,280
Slate (oil, 1,298 feet)	38	1,318
Slate (water, 1,360 feet)	77	1,395
Limestone, dark	16	1,410
Slate, dark	16	1,425
Sand, white	13	1,438
Slate, dark	9	1,447
Limestone, white	53	1,500
Slate, white	4	1,504
Limestone shell	2	1,506
Slate, dark	11	1,517
Slate, light	8	1,525

Logs—Continued.

	Thickness Feet	Depth Feet
Limestone, white .....	35	1,560
Slate, dark .....	25	1,585
Slate, light .....	8	1,593
Sand, light (show of oil, 1,600 to 1,606 feet) .....	32	1,625
Slate, dark .....	13	1,638
Sand, light .....	12	1,650
Slate, dark .....	26	1,676
Sand, light .....	54	1,730
Slate, dark .....	12	1,742
Limestone, light .....	15	1,757
Sand and limestone .....	8	1,765
Red slate .....	3	1,768
Limestone, light .....	10	1,778
Slate, dark .....	12	1,790
Red rock .....	8	1,798
Slate, light .....	15	1,813
Limestone (?), cavy .....	22	1,835
Limestone .....	20	1,855
Limestone, gray, hard, (show of oil, 1,860 feet) .....	20	1,875
Limestone, gray, soft .....	15	1,890
Limestone, dark, hard .....	333	2,223
Total depth .....	.....	2,223

No. 5.

Operators—Ohio Oil Company.  
Farm and well—W. B. Gray, No. 2.  
Location—SW. ¼ sec. 7, Bridgeport Township.  
Elevation—486 feet.

(This record was compiled by Dr. J. A. Udden from the study of well samples.)

	Depth in feet.	
	From	To
Yellow micaceous sandstone, with some quartz pebbles.....	1	10
White micaceous sandstone, with shreds of carbonaceous matter..	10	30
White micaceous sandstone, with some fragments of siderite and pyrite .....	30	35
Gray sandstone, with shreds of vegetation .....	35	40
Gray sandy shale .....	40	45
Black shale and some gray micaceous sandstone .....	45	50
Black micaceous shale .....	50	55
"Clod," with numerous crinoid stems .....	55	60
Black shale and "clod" .....	60	65
Coal and "clod" .....	65	70
Coal, fragments of siderite concretions, limestone and some gray sandstone .....	70	75
Gray sandy shale .....	75	80
Black shale, "clod," some coal and some pure calcite.....	80	90
Dark micaceous shale and coal with calcite .....	90	95
Dark gray micaceous shale .....	95	100
Black shale, with a few crinoid joints .....	100	105
Black shale .....	105	110
Black shale with some limestone .....	110	115
Black shale .....	115	120
Hard black shale .....	120	130
Black shale .....	130	135
Black micaceous shale .....	135	140
Gray micaceous sand, with some black shale .....	140	145
Gray micaceous sandstone, with infiltrated lime, and shreds of carbonaceous matter .....	145	155
Gray micaceous sand .....	155	205
Gray sandstone, some black shale, and a little limestone.....	205	210
Black shale and gray sandstone, with a little limestone.....	210	215
Dull bluish green shale, with some yellowish limestone from concretions .....	215	220
Like the preceding, with fossils in the concretionary limestone...	220	225
Shale, light, green gray unctious, shale .....	225	240
Greenish gray micaceous shale .....	240	245
Light greenish gray shale, unctuous .....	245	250
Light greenish gray micaceous shale .....	250	265
Gray micaceous sandy shale .....	265	270
Gray, rather coarse sandstone with occasional red, pink, green and black grains .....	270	275
Like the preceding, all crushed .....	275	280
Fire clay, fragments of concretions, sandstone .....	280	285

*Logs—Continued.*

	Depth in feet.	
	From	To
Fine clay and some shreds of carbonaceous material .....	285	290
Greenish blue shale, with concretionary yellow limestone .....	290	295
Black shale, with some bits of coal .....	295	300
Gray micaceous sandstone, with infiltrated lime, with some black shale and coal .....	300	305
Gray sandstone, in part laminated, with small siderite concretions .....	305	310
Gray micaceous sandstone with small siderite concretions.....	310	315
Gray sandstone with some black shale .....	315	320
Dirty white limestone, and some sand. Pyrite, crinoid joints, and spine of a Productus noted .....	320	325
Limestone and some shale .....	325	330
Limestone of light color, some gray shale and pyrite. Limestone seems to be concretionary .....	330	335
Gray shale and black shale with yellow concretionary limestone..	335	350
Dark gray shale and some yellow concretionary limestone .....	350	355
Dark gray shale with some pyrite .....	355	360
Dark gray shale, some white limestone and pyrite .....	360	365
Dark gray shale .....	365	380
Dark shale with some fragments of siderite concretions.....	380	390
Sandstone, shale and coal .....	390	395
Shale, with some sandstone and coal .....	395	400
Greenish gray shale .....	400	405
Olive colored shale .....	405	410
Laminated sandy shale .....	410	415
Sandy gray shale .....	415	420
Shale, stony, olive colored .....	420	425
Gray shale .....	425	430
Dark shale, almost black .....	430	435
Gray shale .....	435	460
Gray shale, coal and concretion fragments .....	460	465
Gray fire clay, coal and shale .....	465	470
Gray shale, and gray concretionary limestone, impure, with iron carbonate and with pyrite .....	470	475
Limestone, concretionary and shale .....	475	480
Gray shaly fire clay and concretionary limestone, effervescing slowly .....	480	485
Gray concretionary siderite .....	485	490
Gray shale, with much concretionary impure limestone or siderite .....	490	515
Gray sandy shale, and siderite .....	515	520
Gray micaceous shale, some coal and siderite .....	520	535
Gray sandstone, laminated and with minute spherules of siderite. ....	535	540
Gray shale, with some sandy shale and some black shale.....	540	545
Dark stony shale .....	545	550
Dark micaceous shale with some limestone with crinoid stem.....	550	555
Dark gray shale .....	555	560
Dark micaceous shale and clod with a Productus.....	560	565
Gray shale .....	565	570
Very dark shale and "clod" .....	570	575
Black clay shale with "clod" .....	575	580
Greenish gray micaceous sandy shale .....	580	590
Gray micaceous shale .....	590	605
Greenish gray clayey shale .....	605	615
Black stony shale and some red clay shale .....	615	620
Very dark stony shale .....	620	625
Dark checky shale or fire clay .....	625	630
Dark gray micaceous shale .....	630	635
Dark shale or fire clay, with imprint of leaf .....	635	640
Dark hard shale, slightly micaceous .....	640	645
Gray shale, with some siderite .....	645	650
Gray shale .....	650	655
Gray shale and some gray sandstone .....	655	660
Hard gray shale, with a few pieces of sandstone .....	660	665
Hard gray shale, with a few pieces of siderite .....	665	670
Dark and hard shale .....	670	675
Dark hard shale .....	675	685
Coal and dark shale, with some siderite and pyrite .....	685	690
Coal, with some shale and some siderite .....	690	695
Dark shale and some siderite, coal, and pyrite, bit of shell noted..	695	700
Gray shale and coal, with concretions of siderite, and black shale, with leaf imprints, calcareous .....	700	705
Gray shale, fire clay and coal, calcareous .....	705	710
Gray shale and fire clay calcareous .....	710	715
Like the preceding, with wood in pyrite .....	715	720
Gray clay shale, fine in texture .....	720	725
Black shale, sandstone, and coal .....	725	730
Gray sandstone and dark gray sandy shale .....	730	740
Gray sandstone, and shale .....	740	755
Black miner's slate .....	755	760
Dark shale, carrying much fine pyrite .....	760	765

*Logs—Continued.*

	Depth in feet.	
	From	To
Gray shale, impregnated with small pyrite crystals.....	765	770
Gray shaly sandstone and black shale .....	770	775
Coal, sandstone and some yellow limestone (apparently from a ledge) .....	775	780
Gray micaceous and sandy shale, some red clay shale .....	780	785
Gray shale, coaly shale and shaly coal, with gray limestone and fragments of concretionary siderite .....	785	790
Gray clay shale, with some concretionary fragments .....	790	795
Gray shale, some black shale and siderite concretions.....	795	800
Gray shale, some black carbonaceous shale and some fire clay...	800	805
Gray shale, some black coaly shale, a few bits of white limestone and minute concretionary spherules .....	805	810
Gray shale containing many minute spherules of siderite and some white limestone .....	810	815
Dark shale and fire clay .....	815	830
Dark shale, with some imprints of vegetation .....	830	835
Dark shale and some sandstone, with some minute spherules of siderite .....	835	840
Black shale and gray shale, with some sandstone, some minute spherules of siderite and a few bits of limestone .....	840	845
Black shale, some sandstone and some pieces of siderite.....	845	850
Gray micaceous shale .....	850	855
Black hard shale, with pyrite, shell of <i>Retzia</i> (?), some spicules and a few bits of white limestone .....	855	860
Black stony shale, with pyrite .....	860	865
Black shale, with pyrite and pieces of siderite .....	865	875
Black shale, and white fine grained sandstone, laminated with a few small pieces of very white limestone .....	875	880
Gray laminated sandstone and black shale .....	880	890
Black shale and laminated sandstone, with some grayish soft material and a few bits of white limestone .....	890	895
Coal, with some gray limestone .....	895	900
Gray sandy shale and fragments of concretionary siderite, with some coal .....	900	905
Black shale and gray shale, with some fragments of yellow limestone and concretionary material .....	905	910
Dark gray shale, with a little limestone, and some green serpentine-like shale .....	910	915
Dark gray shale and greenish shale with red blotches, with a few fragments of limestone .....	915	920
Dark gray shale and gray sandy shale.....	920	925
Gray sandy shale with minute crystals of pyrite .....	925	930
Dark gray shale and gray sandstone, with shreds of vegetation...	930	935
Dark gray shale and some sandstone .....	935	940
Gray shaly sandstone and sandy shale .....	940	945
Dark gray sandy shale, pyritiferous .....	945	950
Dark gray sandy shale .....	950	955
Gray clay shale .....	955	960
Gray shale and limestone. The limestone is white, and consists of rounded fragments which are invested with an oolitic incrustation .....	960	965
Dark and stony thin splitting shale and light sandstone.....	965	970
White and gray sandstone and dark gray shale. Sandstone occasionally with interstitial pyrite .....	970	975
Dark gray shale and white sandstone .....	975	985
Dark greenish gray shale .....	985	1,000
Black shale of fine texture .....	1,000	1,005
Dark gray shale, with siderite partly in fragments, partly as spherules .....	1,005	1,010
Dark gray sandstone and dark shale .....	1,010	1,015
Dark shaly sandstone and black shale .....	1,015	1,020
Black shale, with many fragments of siderite .....	1,020	1,025
Black shale .....	1,025	1,030
Black shale, and gray limestone which contains a tangle of tubes of <i>Ammodiscus</i> .....	1,030	1,035
Dark gray and black shale with limestone as above.....	1,035	1,040
White and gray sandstone and gray shale .....	1,040	1,045
White, slightly micaceous sandstone and gray shale.....	1,045	1,050
Gray laminated shaly sandstone .....	1,050	1,060
Gray sandstone .....	1,060	1,080
Laminated gray sandstone and white sandstone .....	1,080	1,100
Yellow sandstone .....	1,100	1,105
Coarse white sand .....	1,105	1,115
Yellow sand .....	1,115	1,125
Red sand .....	1,125	1,135
White sand, finer .....	1,135	1,165
Reddish sand.....	1,165	1,175
Gray sand.....	1,175	1,185



Logs—Continued.

	Depth in feet.	
	From	To
White sand.....	1,185	1,195
Black shale, with some few small fragments of red shale (?).....	1,195	1,200
Black shale and sand with pyrite.....	1,200	1,205
Gray fire clay with shreds of vegetation.....	1,205	1,210
Black clay shale, gray sand.....	1,210	1,215
Black shale, gray fire clay-like shale with shreds of vegetation and sandstone.....	1,215	1,220
Dark fire clay, shale, with shreds of vegetation with some gray sand .....	1,220	1,230
Fire clay, dark shale and sandstone.....	1,230	1,240
Gray shale and sand.....	1,240	1,245
Gray fire clay, and gray sandstone with spherules of siderite.....	1,245	1,250
Black stony shale with large fragments of pyrite and some gray compact siliceous rock.....	1,250	1,260
Black shale showing shreds of vegetation and some gray rock....	1,260	1,280
Laminated dark and gray sandy and stony shale showing mica and shreds of vegetation, very much comminuted.....	1,280	1,345
Black shale with pyrites and some sandstone.....	1,345	1,350
Coarse sand showing secondary enlargement of grains, with some black shale.....	1,350	1,370
	Diameter of grains in mm.	Percentage of total sample.
	2-1 .....	0
	1-½ .....	5
	½-¼ .....	10
	¼-⅛ .....	80
	Less than ⅛ .....	5.00
Gray sand of somewhat finer texture than the preceding.....		1,370
Gray coarse sandstone and some black shale.....		1,375
Like the preceding, but with finer sand.....		1,385
Coarse sand and some gray shale.....		1,390
Sand, white.....		1,395
	Diameter of grains in mm.	Percentage of total sample.
	2-1 .....	0
	1-½ .....	3
	½-¼ .....	6
	¼-⅛ .....	85
	Less than ⅛ .....	6
White sand.....		1,435
Fine reddish sand.....		1,455
Fine gray sand.....		1,460
Fine yellow sand.....		1,465
White limestone, with some sand.....		1,480
Like the preceding, with two minute echinoid stems.....		1,485
Yellowish organic limestone.....		1,490
White limestone containing fragments of fossils and with a few fragments of chalcedonic chert and with much dark shale.....		1,495
Organic calcareous fragments with dark shale and coarse white sand .....		1,500
Dolomitic (?) limestone, with an occasional purple tint, mixed with much shale and sand.....		1,515
Yellowish sandstone, with some shale and dolomitic (?) calcareous fragments .....		1,520
Limestone, organic, fragmental gray, calcareous, with some shale and sand. Some shale is green.....		1,530
Dark gray organic fragmental limestone, with some green shale..		1,545
Like the preceding, with more shale.....		1,550
Gray and greenish shale and gray calcareous limestone, with a fragment of a fossil shell.....		1,555
Gray calcareous organic limestone and greenish shale.....		1,560
Fine gray sand and shale with pyrite.....		1,565
Gray sandstone and shale.....		1,570
Dark gray shale, gray sandstone and limestone.....		1,575
Black shale, showing a few brown blotches.....		1,580
Black shale, with green and red shale, some limestone and pyrite..		1,585
Dark gray shale, with green and some red shale and limestone....		1,590
Like the preceding, with two thin flakes of coal and a few bits of red limestone.....		1,600
Dark gray and greenish gray shale, some white sandstone and some red shale, with some fragments of limestone.....		1,605
Like the preceding but more sandy. Pyrite.....		1,610
Gray fine sand, gray and black shale and limestone and pyrite....		1,615
Gray fine sand and dark gray shale.....		1,620
Black and greenish shale with sandstone and pyrite.....		1,625
Black shale, and gray sand.....		1,630

Logs—Continued.

	Depth in feet.	
	From	To
Black shale and gray sandy shale, with bits of red shale.....	1,635	1,640
Gray shale.....	1,640	1,645
Black shale, greenish shale and sandstone.....	1,645	1,650
Greenish gray shale and some white sand.....	1,650	1,655
Gray and green shale with sand. One fragment of bitumen noted, which burned when ignited.....	1,655	1,660
Black and gray shale and sand in about equal quantities.....	1,660	1,665
Slickensided greenish gray shale and fine sand.....	1,665	1,670
Sandstone and dark shale.....	1,670	1,675
Sandstone, dark shale and some calcareous lime.....	1,675	1,685
Gray fine sand.....	1,685	1,695
Sand and dark shale.....	1,695	1,700
White limestone, dark gray shale and sand effervescing slowly....	1,700	1,710
Fine yellow sand.....	1,710	1,715
Fine gray sand.....	1,715	1,740
Black and dark gray shale.....	1,740	1,750
Dark gray shale and some gray limestone, oolitic grains (?).....	1,750	1,760
Grayish white fine sand.....	1,760	1,765
Grayish white sand and some shale, effervescing slowly.....	1,765	1,775
Dark gray and black shale with some sand.....	1,775	1,780
Calcareous limestone with slow effervescence and dark gray and red shale oolitic grains ½-¼ mm. in diameter.....	1,780	1,785
Gray calcareous limestone with bits of brachiopod shells, spines, occasional oolitic grains, and dark gray and dull red shale. Oolites frequently oval.....	1,785	1,795
Like the preceding, with more sand and more oolitic grains.....	1,795	1,800
Dark shale, some oolitic limestone.....	1,800	1,805
Dark shale, oolitic limestone and some red shale.....	1,805	1,810
Dark shale, red shale, oolitic limestone and lobster colored limestone .....	1,810	1,815
Like the preceding but with less limestone.....	1,815	1,825
Dark greenish gray shale, and dark red shale with limestone, organic .....	1,825	1,830
Like the preceding, with a few limestone fragments of "lobster" red color.....	1,830	1,835
Dark gray, gray and red shale with organic limestone, with slow effervescence .....	1,835	1,855
Oolitic limestone effervescing slowly and black and red shale....	1,855	1,865
Oolitic white calcareous limestone.....	1,865	1,890
Gray limestone effervescing slowly.....	1,890	1,895
Fine gray sand, pure, grain, measuring about 1-6 mm. in diameter	1,895	1,900
Gray limestone, effervescing slowly with acid.....	1,900	1,905
Gray limestone, calcareous.....	1,905	1,940
Gray calcareous limestone with a few bits of chalcedonic chert....	1,940	1,945
Gray limestone, with slow effervescence, with some fragments of chert .....	1,945	1,950
Gray oolitic calcareous limestone.....	1,950	1,965
Gray oolitic limestone effervescing slowly, fragments of ribbed lamellibranch noted.....	1,965	1,970
Gray oolitic limestone, effervescing slowly.....	1,970	1,975
Gray marl.....	1,975	1,980
Gray marl and some limestone.....	1,980	1,985
Gray very finely granular dolomitic and oolitic limestone, with chalcedonic chert.....	1,985	2,000

No. 6.

Operators—Bridgeport Oil Company.  
Farm and well—McPherson, No. 3.  
Location—SE. ¼ sec. 11, Lawrence Township.  
Elevation—429 feet.

	Thickness Feet	Depth Feet
Limestone .....	9	90
Slate .....	65	155
Sandy limestone .....	45	200
Slate .....	15	215
Coal .....	5	220
Slate .....	15	235
Limestone .....	15	250
Slate .....	150	400
Limestone .....	40	440
Slate .....	100	540
Limestone .....	8	548
Slate .....	52	600



*Logs—Continued.*

	Thickness Feet	Depth Feet
Limestone .....	5	605
Sand, (hole full of water, 625 feet) .....	95	700
Slate .....	45	745
Sand .....	30	775
Slate .....	115	890
Limestone .....	6	896
Slate .....	44	940
Sand .....	50	990
Slate .....	5	995
Sandy limestone .....	35	1,030
Sand (water) .....	30	1,060
Slate .....	165	1,225
Limestone .....	55	1,280
Sand .....	52	1,332
Limestone .....	10	1,342
Red rock .....	23	1,365
Slate .....	7	1,372
Limestone .....	3	1,375
Slate .....	35	1,410
Limestone .....	20	1,430
Red rock .....	10	1,440
Slate .....	20	1,460
Limestone .....	20	1,480
Slate .....	10	1,490
Red rock .....	15	1,505
Slate .....	13	1,518
Sand (first oil, 1,520 feet; best oil, 1,543 feet) .....	49	1,567
Limestone .....	23	1,590
Slate .....	55	1,645
Sand .....	15	1,660
Limestone .....	10	1,670
Slate .....	15	1,685
Limestone .....	77	1,762
Sand (water, 1,766 feet) .....	6	1,768
Total depth .....	.....	1,768

*No. 7.*

Operators—Bridgeport Oil Company.

Farm and well—McPherson, No. 4.

Location—SW.  $\frac{1}{4}$  sec. 12, Lawrence Township.

Elevation—425 feet.

	Thickness Feet	Depth Feet
Gravel and quicksand .....	85	85
Sand .....	25	110
Slate .....	28	138
Limestone .....	7	145
Slate .....	55	200
Sand .....	30	230
Limestone .....	5	235
Red rock .....	5	240
Limestone .....	10	250
Slate .....	140	390
Limestone .....	5	395
Coal .....	5	400
Limestone .....	40	440
Slate .....	90	530
Limestone .....	10	540
Slate .....	45	585
Sand (water) .....	90	675
Slate .....	15	690
Sand .....	35	725
Slate .....	65	790
Sand .....	15	805
Slate .....	65	870
Sand .....	10	880
Slate .....	20	900
Limestone .....	5	905
Slate .....	50	955
Sand (water) .....	45	1,000
Slate .....	2	1,002
Sand .....	63	1,065
Limestone .....	10	1,075

Logs—Continued.

	Thickness Feet	Depth Feet
Slate .....	105	1,180
Sand .....	8	1,188
Limestone .....	2	1,190
Slate .....	140	1,330
Sand .....	20	1,350
Limestone .....	5	1,355
Slate .....	15	1,370
Limestone .....	89	1,459
Red rock .....	8	1,467
Limestone .....	8	1,475
Slate .....	34	1,509
Limestone .....	13	1,522
Slate .....	5	1,527
Sand (show of oil) .....	19	1,546
Slate .....	12	1,558
Sand (oil pay, 1,558½ feet; water, 1,563 feet) .....	17	1,575
Slate .....	25	1,600
Limestone .....	50	1,650
Slate .....	15	1,665
Limestone .....	5	1,670
Slate .....	15	1,685
Red rock .....	10	1,695
Slate .....	5	1,700
Limestone .....	71	1,771
Sand .....	4	1,775
Limestone .....	83	1,858
Sandy limestone .....	6	1,864
Limestone .....	122	1,986
Total depth .....	.....	1,986

No. 8.

Operators—Bridgeport Oil Company.  
Farm and well—R. M. Kirkwood, No. 7.  
Location—NE. ¼ sec. 14, Lawrence Township.  
Elevation—435 feet.

	Thickness Feet	Depth Feet
Sand and gravel .....	83	83
Limestone .....	10	93
Slate .....	32	125
Limestone .....	15	140
Slate .....	70	210
Sand (water) .....	25	235
Slate .....	10	245
Limestone .....	5	250
Slate .....	45	295
Limestone .....	5	300
Slate .....	25	325
Limestone .....	20	345
Slate .....	95	440
Sand .....	10	450
Slate .....	180	630
Sand (water) .....	87	717
Slate .....	38	755
Limestone .....	8	763
Slate .....	10	773
Sand .....	27	800
Limestone .....	20	820
Slate .....	40	860
Sand .....	20	880
Slate .....	20	900
Sand .....	20	920
Slate .....	40	960
Sand (water) .....	90	1,050
Slate .....	120	1,170
Sand .....	10	1,180
Slate .....	50	1,230
Limestone .....	6	1,236
Slate .....	8	1,244
Limestone .....	21	1,265
Slate .....	11	1,276
Limestone .....	9	1,285
Sand .....	85	1,370

*Logs—Continued.*

	Thickness Feet	Depth Feet
Slate .....	30	1,400
Limestone .....	20	1,420
Slate .....	15	1,435
Limestone .....	30	1,465
Slate .....	30	1,495
Limestone .....	25	1,520
Red rock .....	15	1,535
Slate .....	5	1,540
Sand (oil, 1,551 feet) .....	40	1,580
Slate .....	5	1,585
Sand (water) .....	5	1,590
Slate .....	5	1,595
Sand .....	10	1,605
Slate .....	5	1,610
Limestone .....	20	1,630
Slate .....	20	1,650
Sandy limestone .....	25	1,675
Slate .....	20	1,695
Limestone .....	10	1,705
Red Rock.....	5	1,710
Limestone .....	57	1,767
Sand .....	8	1,775
Total depth .....	.....	1,775

*No. 9.*

Operators—Snowden Bros.

Farm and well—Cummings, No. 12.

Location—NE.  $\frac{1}{4}$  sec. 6, Bridgeport Township.

Elevation—516 feet.

	Thickness Feet	Depth Feet
Soil .....	25	25
Slate .....	102	127
Limestone, gray, soft.....	8	135
Sand, white.....	45	180
Slate, dark.....	12	192
Sand, light.....	80	272
Slate, dark.....	20	292
Limestone, light, hard.....	13	305
Slate, light, soft.....	18	323
Slate, dark.....	257	580
Limestone, light.....	9	589
Slate, dark.....	311	800
Limestone, light, hard.....	4	804
Slate and limestone shells, dark, soft.....	126	930
Sand, light (little oil, 940 feet).....	40	970
Slate and limestone shells.....	15	985
Sand, light.....	15	1,000
Slate, light (water, 1,006 feet).....	20	1,020
Slate and limestone shells.....	45	1,065
Slate, white.....	70	1,135
Sand, light, soft.....	15	1,150
Slate, black.....	15	1,165
Sand, white (water, 1,175 feet).....	50	1,215
Slate, white.....	5	1,220
Limestone, white, soft.....	20	1,240
Slate, white, hard.....	30	1,270
Sand .....	5	1,275
Slate, light, soft.....	5	1,280
Limestone, white.....	14	1,294
Slate, dark.....	21	1,315
Limestone, gray.....	16	1,331
Slate, dark.....	14	1,345
Sand, gray (gas, 1,347 feet).....	18	1,363
Slate, light.....	3	1,366
Limestone, white.....	19	1,385
Slate, dark.....	4	1,389
Sand, gray.....	7	1,396
Slate, light.....	19	1,415
Red slate.....	10	1,425
Sand, light (oil, 1,428 feet).....	15	1,440
Slate, light.....	15	1,455

*Logs—Continued.*

	Thickness Feet	Depth Feet
Sand, light.....	15	1,470
Red slate.....	7	1,477
Slate and limestone shells, dark.....	33	1,510
Limestone, light.....	15	1,525
Slate, white.....	35	1,560
Sand and limestone shells, white.....	5	1,565
Slate, white.....	7	1,572
Limestone, white.....	28	1,600
Slate, white.....	25	1,625
Limestone, light.....	31	1,656
Sand (show of oil and gas, 1,656 feet).....	3	1,659
Limestone .....	13	1,672
Sand .....	3	1,675
Limestone .....	58	1,733
Total depth.....	.....	1,733

*No. 10.*

Operators—Ohio Oil Company.

Farm and well—S. G. McCleave, No. 4.

Location—Center of section 31, Bridgeport Township.

Elevation—520 feet.

	Thickness Feet	Depth Feet
Loess .....	1	15
Yellow limestone and coal, some pieces of pure calcite, and numerous crinoid stems.....	15	20
Coal, yellow sandstone, some crinoidal limestone and a few pieces of calcite and red marl. Numerous crinoid stems.....	20	25
Coal, yellow sandstone, some crinoidal limestone and a few pieces of calcite and red marl. Numerous crinoid stems.....	25	30
Gray micaceous sandstone with infiltrated lime, some yellow sandstone, bits of coal and calcite.....	30	35
Coal, some yellow and white sandstone, some pieces of crinoidal limestone .....	35	40
Gray micaceous sandstone, some dark shale and fire clay.....	40	45
Coal. Some crinoidal limestone, a little red oxidized material. A small <i>Athyris</i> shell noted, also a piece of crinoid calyx (?)....	45	50
White micaceous sandstone, a few pieces of fire clay and coal....	50	55
Gray micaceous laminated sandstone, some fragments of yellow limestone, some coal.....	65	70
Gray micaceous sandstone, a few fragments of yellow limestone and coal.....	70	75
Yellow sandstone, crinoidal limestone, some black shale and pieces of gypsum. Two <i>Ambocoelia planoconvexa</i> and a crinoid stem noted .....	75	80
Black shale, some dark limestone, and a few pieces of sandstone. A crinoid stem noted.....	80	85
Gray limestone and coal, with some sandstone and shale.....	85	90
Gray micaceous shale.....	90	95
Yellow limestone, some gray sandstone, and bits of siderite.....	95	100
Yellow limestone and gray sandstone, some siderite concretions and shale.....	100	105
Gray shale and fire clay.....	105	110
Dark shale, some siderite concretions, and bits of white limestone.	110	115
Coal, some black shale, gray sandstone, a few bits of calcite and pyrite.....	115	120
Gray micaceous sandy shale, some dark shale and coal, some pieces of yellow limestone and fire clay.....	120	125
Dark shale, some coal, a few pieces of limestone.....	125	130
Dark shale, some red oxidized material, and siderite concretions..	130	135
Coal, some gray micaceous shale, and gray sandstone.....	135	140
Gray micaceous shale, some coal and fire clay.....	140	145
Gray micaceous shale and sandstone, some siderite concretions, a few bits of white limestone.....	145	150
Gray micaceous shale and a few bits of siderite concretions.....	150	155
Siderite, concretionary, some gray micaceous shale.....	155	160
Coal and gray sandstone, some concretionary siderite, some bits of limestone and pyrite. A crinoid stem noted.....	160	165
White sandstone with infiltrated lime.....	165	180
Fine gray sand with infiltrated lime.....	180	185
Fine gray micaceous sand with infiltrated lime, some gray shale .....	185	190
Fine gray sand with infiltrated lime.....	190	210

*Logs—Continued.*

	Thickness Feet	Depth Feet
White micaceous sand.....	210	225
Sand, with infiltrated lime, and some coal.....	225	230
Coal, some white limestone and black shale, some siderite.....	230	235
Gray micaceous shaly sandstone, some bits of coal, pyrite, and siderite .....	235	240
Yellow sand with infiltrated lime; the smaller grains float on water .....	240	245
Gray micaceous sandstone, some small spherules of siderite concretions, a few pieces of pyrite and white limestone.....	245	250
Gray sandstone, some siderite concretions (spherules), some dark shale, and bits of white limestone.....	250	255
Dark sandy micaceous shale, some gray sandstone, and siderite..	255	265
White sandstone.....	265	280
Gray micaceous sandstone, some pieces of laminated sandstone..	280	310
White micaceous sand.....	310	320
White limestone, indistinctly fragmental, a little sand and some gray shale.....	320	325
White limestone like the above, a little dark shale. A crinoid stem noted.....	325	330
White, indistinctly fragmental limestone. Some bits of pyrite, and a crinoid stem noted.....	330	335
Greenish compact limestone, and micaceous sandstone, with some shale .....	335	340
Gray shale, some sandstone.....	340	345
Gray micaceous sandy shale.....	345	350
Gray micaceous shale, some yellow limestone, and one piece containing woody fibre (?).....	350	355
Gray sandy shale, some yellow limestone, and a few siderite concretions .....	355	360
Gray shale, micaceous sandy shale, and some yellow limestone....	360	365
Gray sandstone, some laminated yellow sandstone, some yellow limestone, fragments of siderite.....	365	370
Gray shale and sandstone, some siderite concretions.....	370	375
Gray sandy shale, some siderite concretions. Carbonaceous shreds noted in shale.....	375	380
Siderite concretions, some sandy shale .....	380	385
Gray sandy shale, some concretionary siderite and bits of gray sandstone .....	385	390
Gray sandstone and sandy shale. A few pieces of black carbonaceous shale, coal, some sandstone with infiltrated lime, and some crinoid stems. <i>Retzia punctulifera</i> noted .....	390	395
Gray sandstone, dark shale, some white limestone, concretionary siderite. A crinoid stem and <i>Athyris</i> noted. A little coal noted .....	395	400
Gray shale and some sandstone, concretionary siderite, bits of pyrite, and a few pieces of sandstone with infiltrated lime.....	400	405
Gray sandy shale, and some concretionary siderite .....	405	410
White brecciated limestone, with cracks filled with yellow calcite, some yellow limestone, some siderite, a little gray shale, and sandstone with bits of pyrite .....	410	415
White limestone, cracks filled with yellow calcite, some concretionary siderite .....	415	420
White limestone, having cracks filled with yellow calcite, some yellow limestone, some gray soft shale, and a few bits of coal .....	420	430
White and yellow limestone, cracks filled with calcite, some gray sandstone and a few pieces of black shale .....	430	435
Gray shale and concretionary siderite .....	435	450
Dark gray shale and siderite concretions .....	450	475
Gray sandy shale, some gray sandstone, siderite, and a few fragments of yellow limestone .....	475	480
Gray sandy shale, some pieces of which have layers of siderite, yellow limestone and bits of pyrite .....	480	485
Gray micaceous shale, some gray sandstone, few small fragments of yellow limestone .....	485	490
Gray micaceous shale .....	490	495
Dark shale, some siderite concretions, a few pieces of white limestone and pyrite .....	495	500
Dark shale, some coal and concretionary siderite, and a few pieces of dark limestone. A crinoid stem noted, also some oolitic black concretionary material .....	500	505
Dark shale and some siderite, a few bits of white limestone, coal, and pyrite. Crinoid stem and closely tuberculated crinoid spine noted, also a spiral <i>Ammodiscus</i> . <i>Rhombopora</i> , <i>lepidodendroides</i> , and black shale with fucoidal traversions .....	505	510
Dark shale, some siderite, white limestone, fragments and bits of coal and pyrite. Crinoid stems and a small <i>Syntrielasma hemiplicate</i> noted .....	510	515
Gray micaceous shale, some gray sandstone and yellow limestone .....	515	520

*Logs—Continued.*

	Thickness Feet	Depth Feet
Gray micaceous shale, some sandstone, some pieces of yellow limestone .....	520	525
Gray micaceous shale .....	525	530
Gray micaceous shale, and some sandstone .....	530	535
Gray micaceous shale and some siderite .....	535	540
Gray micaceous shale, some siderite, and a few bits of yellow limestone .....	540	545
Gray sandy shale, some yellow sandstone, bits of yellow limestone and pyrite .....	545	550
Black shale with streaks of pyrite, some siderite concretions, and bits of white limestone .....	550	555
Black shale, some siderite concretions, and white limestone. Crinoid stem noted .....	555	560
Black shale and a few siderite concretions .....	560	565
Yellow concretionary limestone and black shale. Some siderite. More shale than limestone .....	565	570
White and yellow concretionary limestone, some dark shale and gray sandstone, bits of pure calcite, and pyrite. More shale than limestone .....	570	575
Black carbonaceous shale and coal, some white limestone and siderite, and some bits of pyrite .....	575	580
Dark shale, some pieces of yellow limestone .....	580	595
Dark shale, few pieces of yellow limestone and white sandstone, a few pieces of calcite .....	595	600
Dark micaceous shale, some yellow limestone, with layers of calcite, and some sandy shale .....	600	605
Gray sandy shale, some yellow limestone, bits of white sandstone and pyrite .....	605	610
Gray sandy shale, some pieces of dark limestone, and bits of pyrite .....	610	615
Dark sandy shale, some pieces of pyrite .....	615	620
Dark gray micaceous shale, some pieces of yellow limestone, and siderite concretions .....	620	625
Dark gray shale, some pieces of yellow limestone and siderite. A crinoid stem noted .....	625	630
Gray shale .....	630	635
Gray shale, a few siderite concretions, and crinoid stems .....	635	640
Gray sandy shale, some yellow limestone, and concretionary carbonate of iron .....	640	645
Gray shale, some coal and siderite .....	645	650
Soft gray shale, some yellow limestone, and siderite .....	650	655
White limestone, some "clod" and sandstone .....	655	660
Black "clod," some yellow limestone, and soft gray shale .....	660	665
"Clod," with little white limestone and crinoid stems .....	665	670
"Clod," crinoid stems, and Edmondia (?), with some white limestone .....	675	680
Gray shale, yellow limestone and some "clod" .....	680	685
Yellow limestone and gray sandstone, some concretionary siderite and gray shale .....	685	690
Soft gray shale, yellow limestone, and some sandstone .....	690	695
Gray micaceous sandy shale, yellow and white limestone, some "clod," and some pyrites .....	695	700
Gray micaceous shale, some siderite, some white limestone, and pieces of calcite, with some sandstone .....	700	705
Gray, sandy shale, some black shale, and siderite with a few pieces of coal .....	705	710
Gray sandy shale, some coal, and siderite .....	710	715
Gray sandstone and some black carbonaceous shale .....	715	720
Coal and some fire clay .....	720	725
Black shale .....	725	735
Hard black shale .....	735	740
Black shale, a little white sandstone .....	740	745
Gray sandstone, some black pyritiferous shale, and yellow limestone .....	745	750
Gray sandstone, bits of yellow limestone .....	750	755
Gray micaceous sandstone, some pieces laminated, and bits of yellow limestone .....	755	760
Gray shale and sandstone, some imprints of leaves in shale .....	760	765
Dark shale, some sandstone, laminated and micaceous, bits of yellow limestone .....	765	770
Gray micaceous sandstone and dark shale, some yellow limestone .....	770	780
Gray micaceous sandstone, some dark shale, a few bits of limestone .....	780	785
Gray micaceous sandstone and some dark shale .....	785	790
Dark gray micaceous shale, bits of yellow limestone, and siderite .....	790	795
Black micaceous shale .....	795	800
Gray shale and some black micaceous shale .....	800	805
Gray shale, with some imprints of vegetation .....	805	810
Dark micaceous shale and some pieces of yellow limestone .....	810	815
Dark shale, some fragments of yellow limestone .....	815	820



*Logs—Continued.*

	Thickness Feet	Depth Feet
Gray micaceous sandstone, some shale, bits of yellow limestone (small) .....	820	825
Gray micaceous sandstone, a little shale and limestone.....	825	835
Gray sandstone, with concretionary yellow limestone.....	835	840
Gray sandstone, some yellow limestone, and white limestone, with some pieces of dark limestone .....	840	845
Gray micaceous sandstone, some gray shale, and a few pieces of yellow limestone .....	845	850
Dark gray shale, some gray sandstone, few pieces of yellow limestone, and yellow calcite. Crinoid stems and a piece of shell noted .....	850	855
Black shale and a little white limestone. Crinoid stems and a piece of brachiopod shell noted .....	855	860
Black shale and a little yellow limestone. Piece of shell and crinoid stem noted .....	860	865
Black shale, few pieces of yellow and white limestone.....	865	870
Black shale, some concretionary siderite, and bits of yellow limestone .....	870	875
Black shale and some gray shale .....	875	880
Black shale, some siderite and gray sandstone .....	880	885
Gray micaceous sandstone and few pieces of shale.....	885	890
Gray sandstone, few pieces of yellow limestone, and dark shale..	890	895
Gray micaceous shale, some sandstone .....	895	900
Gray micaceous shale .....	900	905
Gray micaceous shale and some dark shale .....	905	910
Dark and gray micaceous shale .....	910	915
Dark gray shale and a few pieces of white limestone.....	915	920
Dark gray shale, bits of limestone, and pyrite .....	920	925
Black shale .....	925	930
Black shale and some fire clay, bits of sandstone .....	930	935
Gray sandstone and some dark sandy shale .....	935	940
Dark sandy shale and sandstone, bits of yellow limestone.....	940	945
Dark sandy shale and sandstone .....	945	950
Dark shale, some sandy shale .....	950	955
Gray micaceous shaly sandstone .....	955	960
Gray micaceous sandy shale and sandstone .....	960	970
Gray micaceous shaly sandstone, some black shale .....	970	975
Gray micaceous sandy shale, bits of yellow limestone.....	975	980
White micaceous sand, a little dark shale .....	980	985
White micaceous sand, some dark laminated shale .....	985	990
Gray sandstone and some dark micaceous shade. Sandstone with infiltrated lime, some pieces of laminated sandstone .....	900	995
White micaceous sand, some dark shale .....	995	1,000
White micaceous sand, little dark shale .....	1,000	1,005
Gray micaceous sand .....	1,005	1,010
Gray micaceous sandstone, some dark shale .....	1,010	1,015
Gray micaceous sandstone .....	1,015	1,025
Gray shale .....	1,025	1,035
Dark gray shale .....	1,035	1,040
White micaceous sand, grains mostly from $\frac{1}{8}$ to $\frac{1}{4}$ mm. in diameter .....	1,040	1,045
White micaceous sand .....	1,045	1,065
White micaceous sand with a little infiltrated lime .....	1,065	1,070
White micaceous sand with some infiltrated lime, a little dark shale .....	1,070	1,080
Gray micaceous sandstone and shale .....	1,080	1,085
White micaceous sand with some infiltrated lime .....	1,085	1,090
Yellow micaceous sand .....	1,090	1,125
Yellow sand .....	1,125	1,130
Yellow sand, showing secondary enlargement of grains.....	1,130	1,135
Yellow sand .....	1,135	1,140
Yellow sand and some dark shale .....	1,140	1,145
Gray sand with some secondary enlargement of crystals.....	1,145	1,150
White sand, very fine .....	1,150	1,155
White sand .....	1,155	1,160
Fine white sand .....	1,160	1,165
White sand and some gray shale .....	1,165	1,170
Fine white sand .....	1,170	1,175
Fine white sand with some infiltrated lime .....	1,175	1,180
Yellow sand .....	1,180	1,190
Yellow sand with infiltrated lime .....	1,190	1,210
White sand, grains mostly from $\frac{1}{8}$ to $\frac{1}{4}$ mm. in diameter.....	1,210	1,215
Fine white sand .....	1,215	1,230
White sand, some grains show secondary enlargement .....	1,230	1,235
White sand .....	1,235	1,280
Yellowish sand .....	1,280	1,290
Yellow sand and some white limestone .....	1,290	1,300
White limestone and sand .....	1,300	1,305
Like the preceding, but with more lime .....	1,305	1,310
Greenish shale with some flakes of mica, some white and dark limestone. Some imprints of leaves .....	1,310	1,315



Logs—Continued.

	Thickness Feet	Depth Feet
Greenish shale, or a fire clay, some limestone, and bits of pyrite.		
Imprints of vegetation .....	1,315	1,320
Gray sandstone, some pieces of pyrite, and greenish shale like in the preceding .....	1,320	1,325
Gray sandstone with some flakes of mica .....	1,325	1,330
A tangled organic oolitic limestone, breccia and some sandstone..	1,330	1,335
A tangle of organic oolitic limestone, effervescence, brisk. Some greenish shale and sand, bits of pyrite .....	1,335	1,345
A tangle organic oolitic limestone, breccia, some pieces of green and red shale .....	1,345	1,350
Oolitic limestone, some dark shale, bits of green and red shale and two pieces of chert .....	1,350	1,355
A tangled organic oolitic limestone, breccia, some black, greenish and brown shale .....	1,355	1,370
Black shale and limestone, like that of the preceding sample.....	1,370	1,375
Black shale and some oolitic limestone, effervescence brisk.....	1,375	1,380
Black and green shale, white limestone .....	1,380	1,390
Black shale and some sandstone .....	1,390	1,395
Black shale and a little sandstone .....	1,395	1,400
Greenish and red shale, some limestone, effervescence brisk. Bits of chert and pyrite .....	1,400	1,405
Dark shale and some reddish colored limestone, effervescence brisk	1,405	1,410
Dark and reddish brown shale, some gray limestone .....	1,410	1,415
Dark shale and some gray limestone, a little red shale.....	1,415	1,420
Black shale and a little limestone .....	1,420	1,425
Black marly shale and some white limestone. Bits of pyrite and red shale .....	1,425	1,435
White limestone, some black marly shale and red shale, numerous crinoid stems .....	1,435	1,440
Black shale, some marly shale and white limestone, crinoid stems and pieces of shells .....	1,440	1,445
White limestone and dark shale .....	1,445	1,450
White limestone and dark shale, some yellow sandstone.....	1,450	1,455
Grayish yellow sandstone with infiltrated lime, some dark shale and white limestone .....	1,455	1,470
Gray sandstone, some black shale .....	1,470	1,475
Red shale, some greenish sandstone with infiltrated lime and little gray sandstone .....	1,475	1,480
Dark sandy calcareous shale, some white limestone and red shale	1,480	1,485
Coarse gray sand and some black shale .....	1,485	1,490
Coarse gray sand .....	1,490	1,500
White sandstone with infiltrated lime and some dark shale.....	1,500	1,515
Gray sandstone and a little dark shale .....	1,515	1,535
Black shale .....	1,535	1,550
Black shale, some yellowish sandstone with infiltrated lime.....	1,550	1,560
Black shale and white limestone. A few fragments of shells.....	1,560	1,565
Black shale and white sandstone, little limestone .....	1,565	1,585
Black shale, white limestone, effervescence brisk, and some sand..	1,585	1,590
Black shale and some white fragmental limestone, crinoid stem noted .....	1,590	1,595
Black shale .....	1,595	1,600
Black shale and a little limestone .....	1,600	1,605
Black shale and some sandstone, and white limestone.....	1,605	1,610
Gray sand, white limestone, (effervescence brisk), and a little dark shale .....	1,610	1,620
White limestone and dark shale .....	1,620	1,625
Black shale and a little limestone .....	1,625	1,645
Black shale and some limestone. A crinoid stem noted.....	1,645	1,650
Black shale and some limestone .....	1,650	1,660
Black shale .....	1,660	1,665
Black and red shale, some white limestone .....	1,665	1,670
Black shale, some red shale and oolitic limestone, (effervescence brisk) .....	1,670	1,680
Greenish and reddish shale, some oolitic limestone .....	1,680	1,685
Greenish shale, some red shale, and some oolitic limestone.....	1,685	1,690
Oolitic limestone, a little sand and greenish shale .....	1,690	1,710
Oolitic limestone .....	1,710	1,740
Oolitic limestone, little greenish shale and bits of pyrite.....	1,740	1,745

No. 11.

Operators—Snowden Bros.  
Farm and well—Perkins, No. 19.  
Location—SW. ¼ sec. 32, Bridgeport Township.  
Elevation—529 feet.

	Thickness Feet	Depth Feet
Soil and slate .....	140	140
Sand .....	45	185

*Logs—Continued.*

	Thickness Feet	Depth Feet
Slate .....	15	200
Sand .....	75	275
Slate .....	30	305
Limestone .....	10	315
Slate .....	20	335
Slate and shale .....	106	441
Sandy shale .....	10	451
Slate .....	95	536
Limestone .....	8	544
Slate .....	96	640
Limestone .....	5	645
Slate .....	70	715
Limestone .....	6	721
Slate .....	79	800
Limestone .....	5	805
Slate .....	43	848
Sandy limestone .....	6	854
Slate, white .....	10	864
Slate, brown .....	46	910
Sand (show of oil, 930 to 950 feet) .....	46	956
Slate, brown .....	10	966
Slate, gray .....	84	1,050
Sand (water, 1,075 feet) .....	115	1,165
Slate .....	40	1,205
Sandy limestone .....	10	1,215
Slate .....	15	1,230
Limestone .....	7	1,237
Slate .....	23	1,260
Red rock .....	10	1,270
Slate .....	24	1,294
Limestone .....	22	1,316
Slate .....	17	1,333
Sand .....	12	1,345
Limestone .....	22	1,367
Shale .....	29	1,396
Red rock .....	11	1,407
Sand .....	30	1,437
Red rock .....	12	1,449
Slate .....	43	1,491
Limestone .....	3	1,494
Slate .....	21	1,515
Sand (oil, 1,520 feet) .....	18	1,533
Slate .....	21	1,554
Limestone .....	13	1,567
Shale .....	7	1,574
Limestone .....	8	1,582
Slate .....	16	1,598
Limestone .....	7	1,605
Slate .....	11	1,616
Limestone (gas, 1,654 feet) .....	70	1,686
Sand (oil, 1,686 to 1,696 feet) .....	10	1,696
Limestone .....	106	1,802
Total depth .....	.....	1,802

*No. 12.*

Operators—Bridgeport Oil Company.

Farm and well—Willey, No. 4.

Location—SE.  $\frac{1}{4}$  sec. 30, Petty Township.

Elevation—517 feet.

	Thickness Feet	Depth Feet
Mud and slate .....	22	22
Sand .....	10	32
Slate .....	128	160
Sand .....	20	180
Slate .....	65	245
Limestone .....	5	250
Slate .....	25	275
Limestone .....	10	285
Red rock .....	5	290
Slate .....	110	400
Limestone .....	5	405
Shale .....	25	430

Logs—Continued.

	Thickness Feet	Depth Feet
Coal .....	3	438
Shale .....	7	440
Limestone .....	5	445
Slate .....	155	600
Limestone .....	65	665
Slate, black .....	20	685
Sand .....	30	715
Slate .....	35	750
Salt sand .....	25	775
Slate .....	40	815
Limestone .....	15	830
Slate .....	67	897
Sand (oil, 907 feet) .....	35	932
Slate .....	18	950
Sand .....	6	956
Slate .....	8	964
Sand (oil, 972 to 983 feet) .....	21	985
Slate .....	23	1,008
Limestone and shale .....	34	1,042
Limestone .....	20	1,062
Sand (water, 1,077 feet) .....	33	1,095
Limestone .....	5	1,100
Sand (water, 1,145 to 1,195 feet) .....	95	1,195
Limestone .....	10	1,205
Slate .....	40	1,245
Red rock .....	10	1,255
Slate .....	7	1,262
Limestone .....	43	1,305
Slate .....	25	1,330
Sand (gas, 1,335 feet) .....	10	1,340
Limestone .....	15	1,355
Slate .....	33	1,388
Red rock .....	7	1,395
Sand (first pay, 1,411 feet; best pay, 1,416 to 1,430 feet) .....	50	1,445
Slate .....	13	1,458
Limestone .....	42	1,500
Sand .....	10	1,510
Slate .....	30	1,540
Limestone (gas, 1,548 feet; best gas, 1,630 to 1,635 feet) .....	95	1,635
Total depth .....	.....	1,635

No. 13.

Operators—Snowden Bros.  
Farm and well—A. Pepple, No. 7.  
Location—NW. ¼ sec. 30, Petty Township.  
Elevation—430 feet.

	Thickness Feet	Depth Feet
Soil and slate .....	15	15
Sand, white .....	90	105
Slate and shells .....	90	195
Sand, white .....	25	220
Slate and shells .....	80	300
Limestone, gritty, hard .....	10	310
Slate, white .....	40	350
Slate and limestone shells .....	80	430
Sand .....	12	442
Slate .....	108	550
Sand .....	20	570
Shale, black .....	20	590
Slate .....	30	620
Sand, white (hole full of water, 660 feet) .....	85	705
Slate, white .....	79	784
Limestone, white .....	2	786
Slate, black .....	29	815
Sand, white (hole full of water, 895 feet) .....	115	930
Slate, black .....	45	975
Sand, dark, hard .....	50	1,025
Slate, black, soft .....	25	1,050
Sand, white, hard .....	32	1,082
Sandy limestone, dark, hard .....	33	1,115
Slate, dark .....	5	1,120
Sand, white (water) .....	53	1,173

Logs—Continued.

	Thickness Feet	Depth Feet
Slate, black .....	27	1,200
Sand, white .....	10	1,210
Slate, black .....	8	1,218
Red rock .....	7	1,225
Slate, black .....	13	1,238
Limestone shells, white .....	10	1,248
Slate, black .....	12	1,260
Limestone, white .....	8	1,268
Slate, black .....	10	1,278
Red rock .....	6	1,284
Slate and shale .....	14	1,298
Limestone, white .....	7	1,305
Sand, white .....	13	1,318
Slate, black .....	20	1,338
Red rock .....	22	1,360
Sand, white (oil, 1,365 to 1,380 feet) .....	40	1,400
Limestone, gritty, black .....	5	1,405
Slate, black .....	25	1,430
Sand, white .....	10	1,440
Limestone, gray .....	10	1,450
Slate, white .....	20	1,470
Limestone, white .....	16	1,486
Slate, black .....	17	1,503
Sandy limestone, white (gas, 1,513 to 1,515 feet) .....	15	1,518
Sand, white .....	32	1,550
Sandy limestone .....	7	1,557
Limestone, white .....	5	1,562
Limestone, brown .....	18	1,580
Sandy limestone, white (green oil, 1,603 feet) .....	26	1,606
Limestone, white .....	13	1,619
Total depth .....	.....	1,619

No. 14.

Operators—Snowden Bros.  
Farm and well—Vanatta, No. 2.  
Location—NE. ¼ sec. 23, Petty Township.  
Elevation—430 feet.

	Thickness Feet	Depth Feet
Clay and quicksand .....	75	75
Slate .....	75	150
Sand (16 ballers of water, 160 feet) .....	50	200
Slate .....	100	300
Limestone .....	30	330
Slate .....	470	800
Sand, hard (water, 850 feet) .....	50	850
Slate, soft .....	160	1,010
Sand, hard .....	100	1,110
Slate, soft .....	55	1,165
Sand, hard .....	225	1,390
Limestone .....	50	1,440
Red rock .....	15	1,455
Slate, soft .....	75	1,530
Sand, hard .....	35	1,565
Slate .....	35	1,600
Sand, hard (show of oil, 1,618 feet) .....	18	1,618
Slate .....	50	1,668
Limestone .....	32	1,700
Slate .....	40	1,740
Sand, hard (green oil) .....	25	1,765
Slate .....	68	1,830
Limestone (show of oil, 1,945 feet; hole full of water, 2,325 feet) .....	760	2,590
Total depth, dry well .....	.....	2,590

No. 15.

Operators—Snowden Bros.  
Farm and well—Childress, No. 3.  
Location—SW. ¼ sec. 24, Petty Township.  
Elevation—440 feet.

Logs—Continued.

	Thickness Feet	Depth Feet
Quicksand .....	50	50
Sand, limestone, and slate .....	220	270
Limestone shells .....	15	285
Slate and limestone shells .....	135	420
Coal and slate .....	13	433
Slate and limestone shells .....	52	485
Slate, brown.....	10	495
Sandstone, white (25 bailers of water, 500 to 525 feet).....	35	530
Slate, black .....	10	540
Slate and limestone shells, white .....	95	635
Coal .....	7	642
Slate and limestone shells .....	133	775
Limestone .....	25	800
Red rock .....	10	810
Slate and limestone shells .....	30	840
Limestone, white .....	10	850
Slate and limestone shells, black .....	130	980
Sandy limestone, white .....	40	1,020
Sand, white and brown (hole full of water, 1,020 to 1,065 feet) ..	275	1,295
Sandy limestone, brown .....	20	1,315
Slate, brown .....	20	1,335
Slate, sand, and shells, white .....	55	1,380
Limestone, white .....	25	1,405
Slate .....	15	1,420
Red rock .....	7	1,427
Slate and limestone shells, black .....	13	1,440
Sand .....	44	1,484
Slate .....	16	1,500
Red shale .....	8	1,508
Slate .....	8	1,516
Sand (small show of oil, 1,520 to 1,560 feet) .....	54	1,570
Slate, black .....	50	1,620
Limestone shells, white .....	5	1,625
Sandy slate, white .....	25	1,650
Red rock .....	8	1,658
Limestone, white .....	8	1,666
Sand, white, hard (oil) .....	29	1,695
Slate and limestone shells, black .....	37	1,732
Limestone .....	44	1,776
Sand (water, 1,781 feet) .....	7	1,783
Total depth .....	.....	1,783

No. 16.

Operators—Bridgeport Oil Company.  
Farm and well—Wood, No. 13.  
Location—NW. ¼ sec. 20, Petty Township.  
Elevation—430 feet.

	Thickness Feet	Depth Feet
Gravel and quicksand .....	90	90
Limestone .....	10	100
Sand .....	20	120
Slate .....	115	235
Limestone shells .....	5	240
Red rock .....	10	250
Slate .....	20	270
Sand .....	30	300
Slate and limestone .....	390	690
Salt sand .....	35	725
Slate and limestone .....	150	875
Sand, broken .....	30	905
Limestone and slate .....	95	1,000
Sand .....	75	1,075
Slate and limestone shells .....	55	1,130
Sand .....	100	1,230
Limestone, hard .....	15	1,245
Slate .....	25	1,270
Limestone .....	5	1,275
Sand .....	19	1,294
Limestone .....	4	1,298
Red rock .....	10	1,308
Slate .....	12	1,320
Limestone .....	5	1,325
Slate .....	15	1,340
Limestone .....	25	1,365

*Logs—Continued.*

	Thickness Feet	Depth Feet
Slate .....	15	1,380
Sand .....	10	1,390
Limestone .....	10	1,400
Slate and broken sand .....	80	1,480
Limestone .....	10	1,490
Slate .....	20	1,510
Limestone .....	12	1,522
Slate and limestone shells .....	58	1,580
Red rock .....	2	1,582
Limestone .....	8	1,590
Sand (green oil) .....	15	1,605
Limestone .....	15	1,620
Slate .....	10	1,630
Limestone .....	40	1,670
Sand .....	12	1,682
Limestone, hard .....	6	1,688
Limestone, soft .....	10	1,698
Sand (salt water) .....	7	1,705
Total depth .....	.....	1,705

*No. 17.*

Operators—Snowden Bros.

Farm and well—Vanatta, No. 1.

Location—NE.  $\frac{1}{4}$  sec. 15, Petty Township.

Elevation—475 feet.

	Thickness Feet	Depth Feet
Sand, dark .....	10	23
Slate .....	400	423
Slate and limestone shells .....	50	473
Limestone shell, white .....	8	481
Red slate .....	12	493
Slate .....	125	618
Sand (little water, 633 feet) .....	15	633
Shell and slate .....	100	733
Slate .....	150	883
Sand, white .....	20	903
Shale, dark .....	100	1,003
Sand, white (water, 1,023 feet) .....	20	1,023
Slate and limestone shells, dark .....	72	1,095
Sand, white (water, 1,115 feet) .....	20	1,115
Slate, dark .....	77	1,192
Sand, light .....	18	1,210
Limestone, gray .....	20	1,230
Slate, white .....	85	1,315
Sand, white .....	55	1,370
Slate .....	60	1,430
Limestone, light .....	20	1,450
Slate, dark .....	60	1,510
Limestone, light .....	5	1,515
Slate, dark .....	5	1,520
Sand, light .....	76	1,596
Slate, dark .....	7	1,603
Limestone, light .....	10	1,613
Slate, dark .....	22	1,635
Sand, gray .....	13	1,648
Red slate .....	12	1,660
Slate, white .....	18	1,678
Limestone shell .....	7	1,685
Slate, white .....	3	1,688
Limestone, light .....	22	1,710
Slate, light .....	33	1,743
Limestone, light .....	20	1,763
Sand, white .....	99	1,862
Slate, dark .....	6	1,868
Limestone, light .....	5	1,873
Slate, dark .....	23	1,896
Limestone, light .....	41	1,937
Sand, white .....	8	1,945
Slate .....	13	1,958
Limestone, gray .....	12	1,970
Sandy limestone (water, 1,970 feet) .....	15	1,985
Limestone, gray .....	10	1,995
Slate, dark .....	8	2,003

Logs—Continued.

	Thickness Feet	Depth Feet
Sandy limestone, hard .....	17	2,020
Limestone, light, hard (water, 2,025 feet) .....	28	2,048
Sandy limestone, hard .....	20	2,068
Limestone, gray, hard .....	12	2,080
Sandy limestone, hard (water, 2,110 feet) .....	95	2,175
Limestone, gray, hard .....	60	2,235
Limestone, light, hard (hole full of water, 2,593 feet).....	358	2,593
Limestone, dark, hard (4 ballers of water, 2,235 to 2,607 feet)...	82	2,675
Sandy limestone, gray .....	40	2,715
Limestone, dark, hard .....	25	2,740
Limestone, gray, hard .....	15	2,755
Limestone, white, hard .....	15	2,770
Limestone, gray, medium hardness. Limestone, gray hard.....	166	2,936
Total depth .....	.....	2,936

No. 18.

Operators—Snowden Bros.  
Farm and well—Piper, No. 10.  
Location—SE. ¼ sec. 2, Petty Township.  
Elevation—439 feet.

	Thickness Feet	Depth Feet
Soil, dark .....	25	25
Gravel, light .....	10	35
Mud, dark .....	35	70
Limestone, light .....	8	78
Slate, light .....	172	250
Sand, light (water, 295 feet) .....	75	325
Limestone, light .....	7	332
Red rock .....	13	345
Sand, white .....	30	375
Slate, dark .....	98	453
Limestone shell, light .....	2	455
Slate, dark .....	25	480
Coal .....	3	483
Slate, black .....	57	540
Limestone, light .....	80	620
Sand, light (5 ballers of water, 625 feet) .....	20	640
Slate and limestone shells .....	25	665
Sand .....	20	685
Slate .....	65	750
Sand, light .....	25	775
Limestone, light .....	20	795
Red shale .....	5	800
Shells and slate .....	30	830
Slate, light .....	28	858
Sand, light .....	17	875
Slate, dark .....	35	910
Sand, white (water, 931 feet) .....	21	931
Limestone, dark .....	9	940
Slate, light .....	20	960
Sand, white .....	120	1,080
Slate, black .....	70	1,150
Sand, light .....	40	1,190
Slate and limestone shells .....	70	1,260
Sand, light .....	10	1,270
Slate and limestone shells .....	30	1,300
Slate, light .....	60	1,360
Limestone, light .....	15	1,375
Slate and shells, light .....	50	1,425
Limestone .....	20	1,445
Slate .....	5	1,450
Sand .....	25	1,475
Red rock .....	6	1,481
Sand, light (show of oil, 1,481 feet) .....	20	1,501
Slate, dark .....	10	1,511
Sand, dark .....	19	1,530
Slate, dark .....	20	1,550
Limestone, light .....	5	1,555
Slate, light .....	5	1,560
Limestone, light .....	4	1,564



*Logs—Concluded.*

	Thickness Feet	Depth Feet
Slate, dark .....	27	1,591
Sand, light .....	29	1,620
Slate, light .....	10	1,630
Limestone shells and sand .....	25	1,655
Limestone shells and slate .....	40	1,695
Limestone .....	13	1,708
Total depth .....	.....	1,708

## STRATIGRAPHY.

*Pleistocene.*

There is a varying thickness of glacial deposits over the Lawrence county oil fields. The drift is from 100 to 115 feet thick in the northern part of Petty township. It thins very rapidly toward the south boundary of Petty and the northern limit of Bridgeport townships, which is the area of a conspicuous uplift of the LaSalle anticline. The drift over this structure is only 20 to 40 feet thick. South of the uplift, in the lower part of Bridgeport and over the Dennison and Lawrence fields, the drift is 50 to 80 feet thick. It thickens perceptibly westward toward the Illinois basin.

*Pennsylvanian.*

The Pennsylvanian rocks of Lawrence county include the shallow producing sand of lower Dennison township, probably of McLeansboro age; the Bridgeport sands in the upper part of the Pottsville; and the Buchanan sand in the basal portion of the Pottsville rocks.

*McLeansboro and Carbondale Formations.*

It is impossible to find the top of the Herrin coal or the dividing line between the McLeansboro and Carbondale formations in this county. No *Fusulina* fossils were found by Dr. Udden in the samples of wells 2, 5 and 10. The rocks of the McLeansboro and Carbondale formations are similar to those of Crawford county. They are represented mostly by shales, numerous sandstones, and a few widely separated beds of limestone and coal. Owing to the impossibility of tracing individual horizons through the section, no correlations were attempted. A casual study of the Bridgeport sands immediately beneath the Carbondale reveals a mild uplift and shows them to be influenced by the LaSalle anticline, though much less in extent than the lower producing formations. Owing to the impossibility of wide correlation, through confusion with lower Pottsville sand beds, only local studies could be made. The sharply defined structure of the Mississippian rocks, the unconformity between the Pennsylvanian and Mississippian, and the milder folding of the Pennsylvanian beds, suggests a secondary disturbance in this region. The Pennsylvanian rocks are thinner over the major uplift of the anticline which is probably due to a preexisting fold in the Mississippian and to erosion before becoming drift covered.

*Pottsville Formation*—The Pottsville rocks are mostly the massive sandstones of the basal part of the Pennsylvanian. The sandstone beds

are often separated by lenses of shale and contain no limestone. Through the section they are from 290 to 600 feet thick with an average of 395 feet. They are very much thinner over the uplift of the LaSalle anticline than along less disturbed areas. The Pottsville rocks rest uncomfortably upon the Mississippian and therefore show much irregularity in thickness. Additional irregularity of the uppermost sands suggest a slight unconformity between the Pottsville and Carbondale. The Pottsville is a prominent salt water horizon over most of Illinois and the main oil fields.

Records 8, 3 and 7 of Plate II and 2, 5 and 18 of Plate IIIA, in addition to that of well Pet. Sec. 36, S. W. No. 8 presented in the A-A cross-section of Lawrence county, page 116, were assembled and plotted in Plate IIIB to show the relations of the Robinson and Bridgeport sands to each other. The logs are arranged in order from south to north and are plotted with respect to the top of the Pottsville which is the key line. The coal-bearing rocks of the McLeansboro and Carbondale lie above the line. The upper Bridgeport sands lie immediately below the line in the first four and the upper Robinson sands in the last three logs. Both the Robinson and Bridgeport lenses are portions of conspicuous sandy zones, belonging to the Pottsville.

### *Mississippian.*

The Mississippian rocks underlie the Pennsylvanian and contain the most important oil sands. The upper portion, known as the Chester group,<sup>1</sup> is limited by erosion to the Tribune formation. Below the Chester in succession are the Ste. Genevieve and St. Louis formations. The Chester beds include the "Gas," Kirkwood, and Tracey sands, and the Ste. Genevieve contains the rich McClosky sand.

*Tribune formation (upper portion of the Chester group)*—The Tribune formation is characterized by a succession of limestones interlain with numerous strata of sand, and red shales. The top of the Chester is considered to be the first limestone underlying the Pottsville sandstones or separated from them by a stratum of shale. The top limestone varies in its depth from the surface through the region, which is attributed to pre-Pennsylvanian erosion. The uplift in southern Petty and northern Bridgeport townships exposed much of the upper portions of the Chester to effective erosion. The average thickness of the Tribune formation in this region is 365 feet with a range of 295 to 440 feet. The Chester rocks in southwestern Illinois, in comparison, are about 700 feet thick. There are two extreme thicknesses of about 440 feet in logs 14 and 15. The wells yielding these logs are some distance down the western limb of the anticline where the formations thicken as they descend into the Illinois basin.

There are usually three strata of limestone interlain with shales which are penetrated before the first distinct sand is encountered in the Chester of Lawrence county. This sand is known as the "Gas" sand and is present over the northern half of the county. The average interval between the top limestone of the Chester and the "Gas" sand in logs 11, 12, 13, 15, and 19 is 125 feet. The next sand below the "Gas" sand is

<sup>1</sup> By some geologists the Ste. Genevieve is also included in the Chester group.

the Kirkwood, 192 feet beneath the top of the Chester. The Kirkwood sand is the most widespread of all producing horizons in Illinois. It usually lies about the middle of the Chester beds of the main fields. This sand is often divided into two or even three lenses.

The red shales are prominent horizon markers over most of central and southern Illinois and the oil fields. These shales are usually very soft and tend to discolor the water in drilling and thus indicate their presence. Most of the complete records in Lawrence county show at least three red shales in the Chester. Two of these usually occur over the Kirkwood and one beneath. The second red bed is often found immediately over the Kirkwood sand. The highest red shale of the Chester is about 50 feet below the top limestone in the northern portion of the field but is very irregular in the southern division.

The Tracey sand is about 317 feet and the McClosky of the Ste. Genevieve is 446 feet lower than the top of the Chester rocks. The lowest wells on the western flank of the anticline (Nos. 14 and 17) show larger intervals between the top limestone of the Chester and the lower beds than other wells over the crest of the fold.

The Tracey sand probably corresponds to one of the lower sand members of the Tribune in southwestern Illinois. The formation is quite uniform in character, a moderately fine-grained, yellowish-brown sandstone, rather heavily bedded in its lower portion, becoming more thinly bedded above. Its thickness varies from 80 feet or less to 150 feet or more.

*Ste. Genevieve*—The Ste. Genevieve limestone underlies the Chester rocks. Stuart Weller says of the Ste. Genevieve:<sup>1</sup> "The Ste. Genevieve limestone has usually not been distinguished from the St. Louis, and in its lithologic characters, especially in its variability, it closely resembles the St. Louis. In it, however, oolitic beds, which are absent in the St. Louis, appear, and it is, perhaps, less cherty than the St. Louis. The main distinction is a faunal one, there being a recurrence of the types of life which were abundant in the Salem, but absent from the St. Louis . . . . . Three members of the Ste. Genevieve limestone have been recognized by Ulrich,<sup>2</sup> the Fredonia member below, the Rosiclare sandstone member in the middle, and the O'Hara member, consisting of limestone and shale, at the top. It is nowhere possible to draw a sharp line between the St. Louis limestone and the base of the Fredonia . . . . . but the line between the Ste. Genevieve and the superjacent Cypress sandstone is a distinct stratigraphic break marked by an erosion unconformity.

Dr. Weller has further observed that the Ste. Genevieve of western Illinois is more oolitic than the average in its lower member and is conspicuously cross-bedded. Its maximum thickness in Monroe county is 100 feet with an average of about 80 feet. He thinks it is possible that the Illinois Ste. Genevieve may represent only the Fredonia limestone of Ulrich's interpretation.

The top of the Ste. Genevieve is used as a key line for the columnar section of Lawrence county, because of its persistence over the oil field. The records of wells and observations of oil men show this limestone

<sup>1</sup> Ibid, p. 26.

<sup>2</sup> Ulrich, E. O., and Smith, W. S. T. The lead, zinc and fluorspar deposits of Western Kentucky. Prof. Paper U. S. Geol. Survey, No. 36, 1905, p. 38.

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This sand

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The top of section of Lawrence The records

<sup>1</sup> Ibid., p. 26.

<sup>2</sup> Ulrich, E. O., Prof. Paper U. S. Geol. Surv.

to be particularly soft in comparison with the underlying St. Louis limestone. It merges into the St. Louis and the only possible distinction between them in this district is one of hardness. The Ste. Genevieve has an average thickness of 85 feet over the field, with a range of 56 to 120 feet.

Dr. Udden studied samples from wells 2, 5, and 10 of the columnar section and makes note of oolites at the top of the Ste. Genevieve. This strongly corroborates Mr. Weller's idea that the Ste. Genevieve of Illinois and particularly this portion of the State represents the basal Fredonia.

The Ste. Genevieve contains the McClosky sand, which has proven the most prolific oil horizon in Illinois. The wells have not only produced an exceptionally large initial flow but they have maintained a steady yield. They have been instrumental in upholding the Illinois production when other sections of the field were declining. The range of depth for the productive McClosky sand is 1,550 to 1,850 feet. The oil is found 20 to 50 feet in the limestone.

*St. Louis Formation*—The St. Louis limestone underlies the Ste. Genevieve and is characterized by extreme hardness, and a blue-gray color. It is often very cherty. This bed, with subjacent limestone members of the Mississippian are over 900 feet thick in this locality. The St. Louis was penetrated in wells 4, 7, 9, 11, 14, and 17. There were 680 feet of St. Louis and lower members recorded in No. 14 and 890 feet in No. 17. Well No. 17 of the columnar section is the deepest bore in Lawrence county. It is 2,936 feet deep. The next deepest is No. 14, 2,590 feet.

## CHAPTER II.

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### General Description of Features of the Main Fields.

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#### INTRODUCTION.

It is not the object of this report to outline new prospective oil areas but to present the geological facts observed in the developed fields, that will corroborate certain laws governing the genesis and accumulation of oil and gas. Certain facts are presented showing the relation of the quantities of oil, salt water, porosity of the sand, etc., to the structural features of the sand. The structure of individual sands is plotted in detail by use of contours and cross-sections; these show the vertical amplitude of the arches.

#### FIELD WORK.

##### TOPOGRAPHIC SURVEYS OF THE AREA.

The United States Geological Survey and the State Geological Survey in coöperation, have been making topographic surveys in and near the oil fields. The Hardinville quadrangle survey was completed in 1908. It covers an area 17 miles long by 13½ miles wide, south of the Illinois Central Railroad. The southern half of the Crawford county oil fields and the northern portion of the Lawrence county fields, namely that portion in Petty township, lie within the Hardinville area. The Sumner quadrangle adjoins the Hardinville area on the south and includes a small portion of this field in its northeast corner. The survey and topographic work was completed during the field season of 1911. The Vincennes quadrangle adjoins the Sumner area on the east and extends into Indiana. It includes a large portion of the Lawrence county fields in its northwest corner. The primary control has been made for the quadrangle but the secondary leveling and topographic work of the Illinois portion of the area are planned for the season of 1912. The levels established in the Hardinville and Sumner quadrangles serve as a basis of the work incidental to this report.

The coöperative work of both surveys has been further extended north of the Hardinville sheet, in the survey and study of over-flowed lands along North Fork of Embarrass river. This covers a narrow strip along the west side of the proposed *Moonshine* quadrangle, adjoining the Har-



dinville area in the north. The survey parallels the west side of the oil fields of Crawford county and will probably serve as a basis for future work in that area. The proposed Oilfield quadrangle is the second north of the Hardinville, and the first north of the *Moonshine* quadrangles. It is planned to survey this area soon. This will then serve as a basis for geological study of the shallow fields of Clark county.

The work of computing the altitudes of wells and tops of the various producing sands would not have been possible had not bench marks been scattered advantageously over the fields, particularly along highways. There were usually one-half dozen or more elevations painted on telegraph poles and fences along each section, which enabled the field men to run levels to the wells with a reasonable degree of accuracy and at the same time to check with other levels on adjoining roads or in other sections.

#### LEVELS IN THE OIL FIELDS.

The primary levels of the U. S. Geological Survey are the most important in the oil fields, as elsewhere, since they are based upon precise levels from a mean sea level and hence are of the highest order. They are usually carried in circuits and thus check upon themselves. The benches of these levels are usually the permanent iron posts planted, two in each township, and not more than six miles apart. The secondary or "flying" levels are carried from the permanent bench posts and are spread generally over local areas. The level figures are painted on fences, culverts, bridges, telephone posts, etc., in order to aid the topographer and geologist in contouring and detailed leveling.

The limit of error in primary leveling is about six inches in 100 miles circuit. There is no prescribed limit of error in secondary leveling although it usually is one foot, which can be easily adjusted between permanent bench marks.

The results of precise and primary leveling in the Hardinville and Sumner quadrangles are given as follows:<sup>1</sup>

#### *Hardinville quadrangle.*

The elevations in the following list are based upon bench mark B<sup>s</sup> of the Coast and Geodetic Survey at Olney, Ill., a square cut at the base of one of the columns of the north face of the court house. The elevation now accepted is 486.117 feet above mean sea level as determined by the 1907 adjustment.

The leveling was done in 1907 by Mr. Henry Bucher, levelman.

The work was done in coöperation with the State and the bench marks are stamped with the State name.

HICKORY POINT SCHOOL ALONG HIGHWAYS NORTH, TO T. 6 N., R. 14 W., NORTHEAST CORNER SECTION 10, THENCE EAST, TO T. 6 N., R. 12 W., NORTHEAST CORNER SECTION 7, THENCE NORTH, TO INDIANAPOLIS SOUTHERN RAILROAD AND EAST ALONG LATTER 2 MILES. TO ROBINSON.

	Feet.
T. 4 N., R. 14 W., 0.25 mile south of northwest corner of section 27, southeast corner of T road, on east side of road, 1.3 feet west of fence, 15 feet south of fence corner; iron post stamped "510 ADJ" .....	510.502

<sup>1</sup> Herron, W. H. Report of the Cooperative Topographic Survey of Illinois, Bull. Ill. State Geol. Survey, No. 14, 1909, pp. 31-182.

	Feet
T. 4 N., R. 14 W., southwest corner of section 3, northeast corner of crossroads, east side of road, 1.1 feet west of fence, 11 feet north of fence corner; iron post stamped "508 ADJ" .....	509.121
T. 5 N., R. 14 W., northeast corner of section 34, at southwest corner of crossroads, on west side of road, 1.1 feet east of fence, 7 feet south of fence corner; iron post stamped "496 ADJ" .....	496.574
T. 5 N., R. 14 W., southwest corner of section 15, northeast corner of crossroads, on north side of road near old rail fence, about 14 feet east of north and south fence line, on east side of north and south road (New Light Christian Church (?) is at southeast corner of crossroads; iron post stamped "457 ADJ".....	457.555
T. 5 N., R. 14 W., southeast corner of section 3, northwest corner of crossroads, west side of road, 6 feet east of fence and 4 feet north of fence corner; iron post stamped "462 ADJ" .....	463.263
T. 6 N., R. 14 W., northeast corner of section 27, southwest corner of crossroads, west side of road, 1.2 feet east of fence, 5.6 feet south of fence corner; iron post stamped "483 ADJ" .....	483.969
T. 6 N., R. 14 W., 0.25 mile east of southwest corner of section 2, T road (the branch to west is very dim), outside of road at T, 1.3 feet south of fence, 15 feet east of north and south fence at fence corner (north of center of T); iron post stamped "478 ADJ" .....	478.367
T. 6 N., R. 13 W., northeast corner of section 7, at southwest corner of T road, on west side of road, 1.2 feet east of fence, 7.5 feet south of fence corner; iron post stamped "483 ADJ" .....	483.298
T. 6 N., R. 13 W., southwest corner of section 2, (crossroads) 0.75 mile south of Stoy, on small bank by pipe line, 1 foot east of fence, 76 feet north of east and west fence line on north side of east and west road; iron post stamped "475 ADJ" .....	476.261
T. 6 N., R. 12 W., northeast corner of section 7, T road, on south side of road opposite the Wilson Schoolhouse, 0.7 foot north of fence, 12 feet east of fence corner, on edge of lane to south; iron post stamped "581 ADJ" .....	531.481

FROM POINT 0.75 MILE SOUTH OF STOY SOUTH ALONG HIGHWAYS TO T. 4 N., R. 13 W. NEAR SOUTHEAST CORNER OF SECTION 29.

	Feet
T. 6 N., R. 13 W., northwest corner of section 23, T road, on bank on south side of road at T, 1.5 feet north of fence, 34.5 feet east of north and south section line fence; iron post stamped "484 ADJ" .....	485.269
Hardinville, section 34, T. 6 N., R. 13 W., on east side of main north and south road just north of Christian Church, 500 feet south of crossroads, 4.2 feet north of fence line between McCarty (south side) and Newman (north side), 6.8 feet west of an old fence line north in correct position; iron post stamped "510 ADJ" .....	510.903
T. 5 N., R. 13 W., 0.25 mile north of southwest corner of section 4, southeast corner of T road, at T, on south side of road, 0.9 feet north of fence, 39 feet east of north and south fence line, on east side of north and south road; iron post stamped "463 ADJ".....	463.826
Chauncey, southwest corner of section 28, T. 5 N., R. 13 W., at northeast corner of crossroads, on east side of road, 1.2 feet west of fence, 6.6 feet north of fence corner; iron post stamped "488 ADJ" .....	488.708
T. 4 N., R. 13 W., 0.25 mile north of southeast corner of section 8, northwest corner of T road, north side of road between 2 walnut trees, 1.2 feet south of fence, 28 feet west of north and south fence line on west side of north and south road; iron post stamped "492 ADJ" .....	492.990

FROM T. 6 N., R. 12 W., NORTHEAST CORNER OF SECTION 29, ALONG HIGHWAYS SOUTH, TO FAIRVIEW CHURCH.

	Feet.
T. 6 N., R. 12 W., quarter corner east side of section 29, T road at southwest corner, on south side of road, 1.1 feet north of fence 7 feet west of 2-foot oak tree at fence corner; iron post stamped "512 ADJ" .....	512.750
T. 5 N., R. 12 W., northwest corner of section 9, at southeast corner of crossroads, on east side of road, 0.8 foot west of fence, 5 feet south of fence corner; iron post stamped "523 ADJ" .....	523.318
T. 5 N., R. 12 W., 0.25 mile east of northwest corner of section 28, southeast corner of crossroads, 0.8 foot west of fence, 6 feet south of fence corner; iron post stamped "442 ADJ" .....	442.767
Westport, section 32, T. 5 N., R. 12 W., iron truss bridge over Embarrass river at southwest corner, in highest part of masonry support, 1. 1 feet from east edge, 0.3 feet from south edge; aluminum tablet stamped "437 ADJ" .....	437.339
T. 4 N., R. 12 W., northeast corner of section 18, southwest corner of crossroads, south side of road, 1.3 feet north of fence, 22 feet west of north and south fence line on west side of north and south road; iron post stamped "436 ADJ" .....	436.534
T. 4 N., R. 12 W., northwest corner of section 29, at crossroads, on south side of road at T, 2.1 feet north of fence line, 23 feet east of north and south fence line at fence corner; iron post stamped "455 ADJ" .....	455.678

*Sumner quadrangle.*

The leveling was done mostly by H. G. Lowe and in part by H. Bucher in 1907.

FROM POINT 4 MILES EAST OF OLNEY EAST ALONG BALTIMORE AND OHIO SOUTHWESTERN RAILROAD, TO CLAREMONT, THENCE ALONG HIGHWAYS NORTH, TO HICKORY POINT SCHOOL.

*(Mean of Direct and Reverse Leveling.)*

	Feet.
Claremont station, 0.36 mile west of, south end of small artificial lake, in top of east wing of masonry dam, 0.9 foot from west edge and 1.8 feet from north edge, in northwest corner; aluminum tablet stamped "498 ADJ" .....	498.826
Claremont, at station crossing; top of south rail .....	509.8

FROM CROSSROADS 0.93 MILE NORTH OF CLAREMONT EAST ALONG HIGHWAY TO T ROAD 0.25 MILE EAST OF NORTHEAST CORNER SECTION 5, T. 3 N., R. 13 W., THENCE NORTH 1 MILE.

	Feet.
T. 4 N., R. 14 W., southwest corner of section 36, at northeast corner of crossroads, on east side of road, 0.7 foot west of fence, 22 feet north of fence corner; iron post stamped "509 ADJ" .....	510.263
T. 3 N., R. 13 W., 0.25 mile east of northwest corner of section 4, at T road, 0.7 foot north of fence, 24.5 feet east of telegraph pole, about 11 feet east of center line of north and south road; iron post stamped "483 ADJ" .....	484.085
T. 4 N., R. 13 W., 0.25 mile east of northwest corner of section 33, at T road, on west side of road, 2.2 feet east of fence, in concrete post flush with ground; aluminum tablet stamped "Prim. Trav. Sta. No. 10, 489 ADJ" .....	490.408

FROM T. 3 N., R. 13 W., SEC. 5, 0.25 MILE EAST OF NORTHEAST CORNER, EAST TO T. 4 N., R. 12 W., NORTHEAST CORNER SECTION 32, THENCE NORTH, TO FAIRVIEW CHURCH.

	Feet.
T. 4 N., R. 13 W., southwest corner of section 36, opposite U. B. Union Chapel, at northeast corner of crossroads, on east side of road, 1.1 feet west of fence, 62 feet north of fence; iron post stamped "570 ADJ" .....	571.168
T. 3 N., R. 12 W., northwest corner of section 4, at crossroads, State road east to west, on south side of road, on bank a little east of center of road to north, 0.9 foot north of fence, 18.5 feet east of telegraph pole; iron post stamped "457 ADJ" .....	457.461

FROM POINT 2 MILES NORTH OF BRIDGEPORT SOUTH, TO GRANT SCHOOL, THENCE WEST 5.6 MILES, THENCE NORTH, TO SUMNER.

	Feet.
Bridgeport, 100 feet north of railroad, on front face of southeast corner of yellow brick building owned by F. W. Cox, about 3 feet above sidewalk; aluminum tablet stamped "449 1908" .....	448.591
T. 3 N., R. 12 W., corner of sections 20, 21, 28 and 29, at northwest corner of crossroads; iron post stamped "489 1908" .....	489.774
Grant School, corner of sections 4, 5, 8 and 9, T. 2 N., R. 12 W., at northwest corner of crossroads, in southeast corner of school yard, iron post stamped "446 1908" .....	446.892
T. 2 N., R. 13 W., quarter corner between sections 4 and 9, at southwest corner of crossroads, 3 feet west of corner of John White's yard; iron post stamped "476 1908" .....	477.274
Sumner, on Main street, 250 feet south of railroad, at northeast corner of street crossing in brick building owned by Mart Wagner, in south face on foot from southwest corner and 3 feet above ground; aluminum tablet stamped "461 ILLINOIS 1908" .....	462.148
Sumner, railroad crossing on Main street; top of rail .....	460.5

FROM POINT 5.6 MILES WEST OF GRANT SCHOOL WEST, TO BROWNSVILLE, THENCE NORTH, TO CLAREMONT.

	Feet.
T. 2 N., Rs. 13 and 14 W., corner of sections 1, 6, 7 and 12, Lawrence-Richland county line, at northwest corner of crossroads, in root of tree; spike .....	537.90
Preston School, corner sections 3, 4, 9 and 10, T. 2 N., R. 14 W., in front of T road east, 600 feet south of T road west, in southeast corner of school yard; iron post stamped "456 1908" .....	456.244
Black Oak School, corner of sections 27, 28, 33 and 34, T. 3 N., R. 14 W., at northwest corner of crossroads, in southeast corner of school yard, in tree root; spike .....	497.20
T. 3 N., R. 13 W., at corner of sections 21, 22, 27 and 28, at southwest corner of crossroads, by picket fence; iron post stamped "506 1908" .....	505.920
Claremont, in front of station; top of rail .....	509.7

GRANT SCHOOL SOUTH, TO NEAR PATTON.

	Feet.
T. 2 N., R. 12 W., quarter corner between sections 20 and 21, at northeast corner of crossroads, in southwest corner of school yard; iron post stamped "445 1908" .....	445.641
T. 1 N., R. 12 W., corner sections 8, 9, 16 and 17, at northwest corner of crossroads, by picket fence; iron post stamped "462 1908" .....	462.325

FROM POINT 5.6 MILES WEST OF GRANT SCHOOL SOUTH AND EAST, VIA FRIENDS-  
VILLE, TO NEAR PATTON.

	Feet.
T. 2 N., R. 13 W., quarter corner between sections 21 and 28, in front of T road west of schoolhouse, 4 feet south of corner fence post; iron post stamped "460 1908" .....	460.636
Lancaster, 400 feet east by 400 feet south of middle of section 4, T. 1 N., R. 13 W., in west face of Lutheran church directly under window south of entrance, about 2.5 feet above ground; aluminum table stamped "494 ILLINOIS 1908" .....	494.584
Stoeltz Schoolhouse, quarter corner between sections 20 and 21, T. 1 N., R. 13 W., at southwest corner of crossroads, in northeast corner of school yard; iron post stamped "459 1908" .....	459.431
Friendsville, quarter corner between sections 23 and 24, T. 1 N., R. 13 W., in east side of brick house of Dr. C. S. Couch, near southeast corner, about 3 feet above ground; bronze tablet stamped "482 VIN" .....	481.722

FROM STOELTZ SCHOOL WEST, TO PINHOOK, THENCE NORTH, TO BROWNSVILLE.

	Feet.
T. 1 N., Rs. 13 and 14 W., 0.25 mile north of quarter corner between sections 19 and 24, in front of and about 20 feet south of center line of T road east; iron post stamped "409 1908" .....	409.460
Pinhook, quarter corner between sections 21 and 22, T. 1 N., R. 14 W., at northeast corner of T road north; iron post stamped "435 1908" .....	435.611
T. 1 and 2 N., R. 14 W., about 0.1 mile east of quarter corner between sections 4 and 33, at northwest corner of crossroads, opposite small white house; iron post stamped "458 1908" .....	458.416
Red Head Schoolhouse, quarter corner between sections 16 and 21, T. 2 N., R. 14 W., at southwest corner of crossroads, in northeast corner of school yard; iron post stamped "462 1908" .....	462.584
Preston School, corner of sections 3, 4, 9 and 10, T. 2 N., R. 14 W., in front of T road east, 600 feet south of T road west, in southeast corner of school yard; iron post stamped "456 1908" .....	456.244

GEOGRAPHIC POSITIONS OF QUADRANGLES.

The following are the geographical positions of points in the three quadrangles covered by this report:

*Hardinville quadrangle.*

*Crawford, Jasper, Lawrence and Richland Counties*—The following geographic positions were determined by primary traverse run in July, 1907, by Mr. J. R. Ellis, assistant topographer. The line starts from Claremont triangulation station and follows highways along south and east edges of quadrangle to Robinson, thence westerly along the Illinois Central Railroad to Oblong triangulation station, thence westerly along railroad to Willow Hill, thence southerly along railroad and highways on west edge of quadrangle to Claremont triangulation station:

Geographic Positions Along Highways Near South Border of Quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
Claremont triangulation station of the U. S. Lake Survey and U. S. C. & G. S., in section 29, T. 4 N., R. 14 W., German township, 3 miles northwesterly from town of Claremont a station on Ohio and Mississippi Railroad, on land of Brinkley heirs. Station mark: Two stone posts, one above the other in the usual manner. Reference marks. One north 67° 33' west, distant 23.1 meters. One north 0. 39' west, distant 7.8 meters. One north 71° 45' east, distant 24.6 meters from station mark. Northwest corner of section 29 bears north 60° 03' west, distant 847 meters from station mark.....	38 45 28.5	87 59 40.8
T. 4 N., R. 14 W., corner sections 28, 29, 32 and 33, 20 feet south to corner fence post.....	38 44 49.1	87 59 03.2
T. 4 N., R. 14 W., corner sections 27, 28, 33 and 34, T road west at school house, 10 feet east to rail fence.....	38 44 48.8	87 57 55.4
T. 4 N., R. 14 W., quarter corner between sections 26 and 27, crossroads, 15 feet north to center of bridge.....	38 45 15.1	87 56° 47.2
T. 4 N., R. 14 E., quarter corner between sections 25 and 26, center of crossroads.....	38 45 14.9	87 55 39.3
T. 4 N., R. 13 and 14 W., quarter corner between sections 25 and 30, center of crossroads, Richland and Lawrence county line.....	38 45 14.7	87 54 31.4
Sumner, 2.25 miles north by 0.25 mile west of; on west side of road at T road east, 2 feet west to fence, 25 feet east to center of T road east, in top of concrete block 8 x 8 x 20" in ground, aluminum tablet stamped "Prim. Trav. Sta. No. 10, 1907, ILLINOIS".....	38 44 47.8	87 51 58.4
T. 4 N., R. 13 W., corner sections 27, 28, 33 and 34, 25 feet south to corner fence post.....	38 44 47.7	87 51 06.9
T. 4 N., R. 13 W., east corner sections 27 and 34, stone, T road west at church.....	38 44 47.5	87 49 58.9
T. 4 N., R. 13 W., corner sections 25, 26, 35 and 36, center of T road south.....	38 44 44.0	87 48 55.7
T. 4 N., R. 12 and 13 W., corner sections 25, 30, 31 and 36, crossroads, 10 feet west to center of small bridge.....	38 44 43.8	87 47 48.1
T. 4 N., R. 12 W., stone corner sections 29, 30, 31 and 32, T road south Westport, 5.75 miles due south of; on east side of T road west at Fairview church, in top of concrete block 8 x 8 x 20" inches, aluminum tablet stamped "Prim. Trav. Sta. No. 11, 1907, ILLINOIS".....	38 44 44.8	87 46 42.8
T. 4 N., R. 12 W., corner sections 28, 29, 32 and 33, center of T road west.....	38 44 46.0	87 45 35.3
	38 44 45.9	87 45 35.5

Geographic Positions Along Highways Near East Border of Quadrangle.

Stations.	Latitude.	Longitude.
	° ' "	° ' "
T. 4 N., R. 12 W., corner sections 20, 21, 28 and 29, T road west.....	38 45 39.2	87 45 35.4
T. 4 N., R. 12 W., stone corner sections 16, 17, 20 and 21, fence east and west.....	38 46 32.2	87 45 35.4
Center of T road east.....	38 46 44.2	87 46 38.5
T. 4 N., R. 12 W., corner sections 7, 8, 17 and 18, center of crossroads..	38 47 23.4	87 46 41.8
Westport, 0.75 mile east of; intersection at T road west.....	38 49 40.2	87 44 42.8
T. 5 N., R. 12 W., corner sections 21, 22, 27 and 28, center of county line road at north and south fence.....	38 51 00.0	87 44 26.0
Crawford, 1 mile north of; Lawrence county line.....	38 51 54.8	87 43 52.1
T road east, southeast corner, 7 feet north and 4 feet west to maple tree, 35 feet north and 20 feet west to center of T road east, in concrete block, aluminum tablet stamped "Prim. Trav. Sta. No. 12, 1907, ILLINOIS".....	38 52 57.9	87 43 52.7
Quarter corner between sections——, center of crossroads.....	38 53 40.5	87 43 53.1
T. 5 and 6 N., R. 12 W., corner sections 3, 4, 33 and 34, stone, 1,340 feet east of; T road east on T. S. line.....	38 54 41.6	87 44 10.4
T. 6 N., R. 12 W., corner sections 27, 28, 33 and 34, T road west, 25 feet due east to corner fence post.....	38 55 34.0	87 44 27.5
Road west at Indian boundary.....	38 56 19.8	87 44 51.8
New Hebron, T road just northeast of; 10 feet northeast to large black oak tree.....	38 57 31.1	87 44 35.8
Lane east at turn of road.....	38 58 19.1	87 44 30.2
T. 6 N., R. 12 W., corner sections 3, 4, 9 and 10, T road west at school house, 12 feet east to corner yard fence.....	38 58 59.3	87 44 19.2
T. 6 N., R. 12 W., north corner sections 3 and 4, center of T road south, just east of entrance to Robinson Fair Grounds.....	38 59 54.5	87 44 19.8
Robinson court house, in stone post at south entrance to grounds, aluminum tablet stamped "Prim. Trav. Sta. No. 13, 1907, ILLINOIS".....	39 00 18.2	87 44 21.6



Sumner quadrangle.

Edwards, Lawrence, Richland and Wabash Counties—The following geographic positions on U. S. Standard datum were determined by primary traverse in 1908 by J. R. Ellis, assistant topographer. The line starts from Claremont triangulation station of the U. S. Lake Survey and Coast and Geodetic Survey and follows south along public highways to Parkersburg triangulation station, thence to southwest corner of Sumner quadrangle, thence east to point near Patton and north along border of quadrangle to primary traverse station No. 11, 1907, Illinois:

Geographic Positions Along Highways.

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
St. James church, center of cross roads at.....	38	44	49.2	87	59	54.4
T. 1 N., R. 14 W., ¼ corner between secs. 20 and 21, center of cross roads	38	30	15.3	87	59	05.2
Mills Prairie school house No. 13, at northeast corner of T road north, 0.25 mile east of, 25 feet south and 25 feet west to ¼ corner between secs. 21 and 22, T. 1 N., R. 14 W., elevation 435; iron post stamped "Prim. Trav. Sta. No. 13, 1908, Illinois".....	38	30	15.2	87	57	57.8
Edwards-Wabash county line, center of bridge over Bonpas creek..	38	30	18.4	87	56	53.2
T. 1 N., R. 14 W., ¼ corner between secs. 23 and 24, center of T road south.....	38	30	14.6	87	55	48.1
T. 1 N., R. 13 and 14 west, ¼ corner between secs. 19 and 24, center of T road west.....	38	30	14.5	87	54	41.2
Barney Prairie church, stone at T road west at.....	38	30	10.0	87	47	55.0
Harmony school house, in southwest corner of yard at; 35 feet south and 30 feet west to ¼ corner between secs. 20 and 31, T. 2 N., R. 12 W., cross roads; elevation 445; iron post stamped "Prim. Trav. Sta. No. 17, 1908, Illinois".....	38	35	26.0	87	45	34.1
T. 2 N., R. 12 W., ¼ corner between secs. 20 and 21, center of cross roads	38	35	25.7	87	45	34.5
T. 2 N., R. 12 W., corner secs. 16, 17, 20 and 21.....	38	35	52.0	87	45	34.0
T. 2 N., R. 12 W., corner secs. 8, 9, 16 and 17.....	38	36	44.6	87	45	33.4
Grant school house, in southeast corner of yard at; elevation 446; iron post stamped "Prim. Trav. Sta. No. 18, 1908, Illinois".....	38	37	38.2	87	45	33.4
T. 2 N., R. 12 W., corner secs. 4, 5, 8 and 9, center of cross roads.....	38	37	37.5	87	45	33.1
T. 2 N., R. 12 W., corner secs. 4 and 5 (north corner), T road south...	38	38	34.6	87	45	33.0
T. 3 N., R. 12 W., corner secs. 32 and 33 (south corner), T road north..	38	38	34.6	87	45	34.6
Bridgeport, at northeast corner of cross roads about 3 miles south of; iron post stamped "Prim. Trav. Sta. No. 19, 1908, Illinois".....	38	39	28.0	87	45	33.8
T. 3 N., R. 12 W., corner secs. 28, 29, 32 and 33, cross roads.....	38	39	27.7	87	45	34.0
Bridgeport, at northwest corner of cross roads 2 miles south of, elevation 489; iron post stamped "Prim. Trav. Sta. No. 20, 1908, Illinois".....	38	40	20.7	87	45	34.3
T. 3 N., R. 12 W., corner secs. 20, 21, 28 and 29, center of cross roads...	38	40	20.4	87	45	33.9
T. 3 N., R. 12 W., corner secs. 16, 17, 20 and 21, center of T road west..	38	41	13.2	87	45	33.5
T. 3 N., R. 12 W., corner secs. 8, 9, 16 and 17.....	38	42	06.2	87	45	33.3
Bridgeport, Main street crossing Baltimore & Ohio railroad.....	38	42	19.2	87	45	35.3
T. 3 N., R. 12 W., corner secs. 4, 5, 8 and 9, center of cross roads.....	38	42	59.3	87	45	33.1
T. 3 N., R. 12 W., corner secs. 4 and 5 (north corner), 20 feet north to T road south.....	38	43	52.6	87	45	33.0
Westport 5.75 miles due south of; on east side of T road west at Fairview church, in top of concrete block 8 by 8 by 20 inches; aluminum tablet stamped "Prim. Trav. Sta. No. 11, 1907, Illinois".....	38	44	46.0	87	45	35.3

Magnetic Declination of east border of quadrangle 3° 50' east.  
Magnetic Declination of south border of quadrangle 3° 47' east.  
Magnetic Declination of west border of quadrangle 3° 36' east.

Vincennes quadrangle.

Geographic Positions Along Highways Near West Border of Quadrangle.

Station.	Latitude.			Longitude.		
	°	'	"	°	'	"
Patton, at southeast corner of T road west, 1.25 miles north and 0.5 miles east of; 15 feet north and 20 feet west to center of T road: iron post stamped "Prim. Trav. Sta. No. 16, 1908, Illinois".....	38	29	54.5	87	44	29.8
T. 1 N., R. 12 W., corner secs. 15, 16, 21 and 22.....	38	30	34.3	87	44	30.7
T. 1 N., R. 12 W., corner secs. 9, 10, 15 and 16, center of cross roads....	38	31	27.3	87	44	31.8



*Geographic Positions Along Highways Near South Border of Quadrangle—*  
Concluded.

Stations.	Latitude.			Longitude.		
	.	.	.	.	.	.
T. 1 N., R. 12 W., corner secs. 3, 4, 9 and 10, center of T road west, at school house.....	38	32	20.0	87	44	32.6
T. 1 N., R. 12 W., stone corner secs. 3 and 4 (north corner).....	38	33	14.9	87	44	33.4
T. 2 N., R. 12 W., stone corner secs. 33 and 34 (south corner).....	38	33	14.9	87	44	29.3
T. 2 N., R. 12 W., corner secs. 27, 28, 33 and 34, Lawrence-Wabash county line.....	38	34	06.8	87	44	28.5
Harmony school house, 1 mile east of, center of cross roads.....	38	35	25.4	87	44	27.0

Magnetic Declination west border of quadrangle 3° 50' east.

## ELEVATIONS OF OIL WELLS.

The elevation of most of the oil wells in the area studied were secured by means of a Locke or hand-level. The secondary bench marks served as bases for the work, and levels were run from them to the wells. The limit of error in this work was about two feet, although it was probably less because of the check with previously determined elevations and other bench marks. Elevations of about 5,200 wells were determined in the two counties. The leveling in the Hardinville quadrangle was done wholly by use of the Locke level while the elevations of the wells in the Sumner quadrangle were determined by use of a Y level in charge of W. E. Deuchler. As no leveling had been done in the Vincennes quadrangle it became necessary to run secondary levels through the active oil fields from the Sumner quadrangle. About 24 square miles of secondary levels were made in this fashion.

## COLLECTION OF WELL RECORDS.

Records were collected from about 95 per cent of the wells in the area although about 94 per cent of these were skeleton logs or simply notations of the depth and thickness of the producing sands. The scarcity of detailed logs is probably due to rapidity of early development, and the lack of appreciation of their importance. Many detailed records are indispensable in a geological study of any area, especially such as Illinois, which is so covered with drift as to conceal the sequence of formations and practically all evidence of folding. Too little attention is paid to the formations above the oil producing sands, which may often prove excellent key horizons, or widespread formations, that may enable a geologist to interpret future records more readily. All operators and drillers are urged to note the positions of all formations in their wells, as a matter of possible value to themselves in drilling in other areas in the State, and as an assistance to the survey whose duty it is to work out the geological problems connected with the oil industry of the State.

The vast number of records collected for study necessitated a compact and efficient method of readily locating desired logs. A loose-leaf system was established for collecting records in the field and later filing these permanently in the office in suitable binders. The records are arranged by township binders and in each of these, by section, farm name, operator and well number.

## GEOLOGICAL ASPECTS.

### GENERAL STATEMENT.

It is particularly valuable if an area whose oil resources are under investigation has a persistent key horizon at or near the surface, from which may be determined the interval to the producing sands and the geologic structure. Coals, such as the Pittsburg coal of the Appalachian region or the Herrin (No. 6) coal of western Illinois, serve as excellent key horizons. Limestones of peculiar lithological characteristics are also good horizons for these purposes. Unfortunately, the formations along the eastern boundary of Illinois, as over most of State, are concealed with drift and have been studied but little. Moreover, there are no coal mines in this section of the State and the wells of the main fields have offered little or no help toward recognizing persistent horizons close to the surface. Under these conditions it became necessary to resort to altitudes of the sand with respect to sea level in the determination of structure and sand relations.

### LOCAL NAMES OF SANDS.

The productive horizons in the several pools of Lawrence county were given the names of the land owners upon whose farms oil was first found in these particular horizons, except for the lenticular Bridgeport sands, first discovered in the county. These were named after the town of Bridgeport. The producing sands of Crawford county are also lenticular and are called the Robinson sands, after the city of Robinson. The operators were able to follow and distinguish the sands in their development from the shallow to the deeper fields and in computing their records, designated the names of the sands with fair accuracy. Where the names were missing, the sands were later found to fit their particular horizons on the structure maps and cross-sections.

### CORRELATION OF SANDS.

Strip plotting was resorted to in correlating sands. The record of the wells were plotted to uniform scale, and with the same symbols, on long narrow strips of cross-section paper. The strips were compared, and by shifting one at the side of the others, the relations of the logs to one another were found. The interpretation and correlation of logs, especially those of wells in the Pennsylvanian beds, requires much work and the results are not always satisfactory.

### ALTITUDES OF SANDS.

The method used to ascertain the altitudes of the tops of the producing sands was to subtract the elevation of the mouth of the well from the depth to the sand. The altitudes were usually below sea level and therefore were negative. In drawing a contour map under these conditions the high numbers would signify low places and reversely, low numbers high places. In order to avoid confusion in studying contouring an assumed plane 1,500 feet below sea level was chosen, and from this the negative altitudes were subtracted. The resulting high

figures then correspond to high places in the structure and the low numbers to low places.

### TABLES OF WELL DATA.

The desire to present the vast amount of data from wells in the studied area resulted in the compact tables presented on page 185. In order to show reference from well to table it became necessary to adopt a system of well numbers that would not crowd the map. Each section is, therefore, divided into quarters which serve as units for numbering. The total number of wells for each quarter-section is thus kept below 100. References to wells in the text are abbreviated as follows, Pet. sec. 30, SE., No. 60, which signifies well No. 60 in the southeast quarter of section 30, Petty township, Lawrence county, and the record of which may be found in the tables of well data. Other abbreviations are as follows: Ob., Oblong township; Rob., Robinson township; H. C., Honey creek township; Mar., Martin township, all of Crawford county; Bport., Bridgeport township; Law., Lawrence township, and Den., Dennison township, all of Lawrence county.

### COUNTOUR MAPS.

The structure of the producing sands is graphically presented by use of contours or lines defining the elevation, horizontal form, and slope of the top of the sand. The elevation of the contour is designated by the large number which is set in, or at the end of, the line. The slope, or dip and rise of the sand, is expressed through numbers on consecutive contour lines.

The contour maps were drawn on a key or base map which shows the position and reference numbers of all the wells drilled in the area and also additional culture such as towns, streams, roads, pumping stations, etc. All wells that furnished data for a given sand were plotted in position on a skeleton map on which the culture was omitted. The positive altitudes of the sands, with respect to the assumed datum plane 1,500 feet below mean sea level, were contoured between wells. These constitute the structure maps.

### CROSS-SECTIONS.

The structure of the several producing sands is further shown by the use of cross-sections. They portray graphically the rise and the fall of the oil sands along chosen lines and are intended to make clearer the mental picture of the contour idea to those who are not familiar with contouring. At the same time the sections show the relation of the structure of one sand to that of another. The only cross-sections presented in this report are those of Lawrence county.

### CHAPTER III.

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#### Detailed Geology of the Crawford County Fields.

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#### GENERAL FEATURES OF THE OIL FIELD.

The shape and extent of the Crawford county pools within the Hardinville quadrangle, are shown on Plate IV, the base map of the area. The map shows the development up to January 1, 1909. The Robinson pool is about 7 miles wide between Oblong and Robinson, but it narrows to about  $3\frac{1}{2}$  miles at the southern limit of the county. The western boundary of the oil field trends northwest and southeast and is distinctly abrupt. Its eastern edge is very irregular and the oil zone appears to have pinched out here and there as shown by light producing wells and many dry holes.

A barren area about 3 miles wide separates the Robinson and Honey creek pools in Crawford county and continues south and southwest in a Y shape, separating the Lawrence county pools from those of Crawford county. Detailed data are not at hand to account definitely for the break. It is probably due to a series of undulations transverse to the major axis of the dominant anticline, since the Honey creek sands lie lower structurally than those of the Robinson pool and the Lawrence county sands, higher than those in Crawford county.

Other conspicuous gaps in the Robinson pool are the Hardinville gas dome and an irregular break from east to west directly south of the Illinois Central Railroad. The area just east of Hardinville, namely section 35, Martin township, is barren of oil, except in the northwest corner and along the south line, but shows evidence of fair gas pressures. The producing sands indicate a structural dome. The narrow barren area through sections 2, 3, 4, 8, 9, 10 and 16, T. 6. N., R. 13 W., is due to noticeable thinning of the sand which, elsewhere, varies between 2 and 15 feet in thickness. In some instances the sands are entirely absent. This condition is probably accompanied by a lack of sufficient porosity in the sands to allow oil diffusion; at any rate, there is more regularity in the position, thickness, and production of the sands on both sides of the break.

The Crawford county pools are distinctive for possessing one general oil producing zone, known as the Robinson sand. This sand is so broken

and lenticular that it offers little opportunity for structural study. In fact, the sand shows innumerable streaks, tongues, and detached portions and so prohibits correlation and contouring. In some portions of the field, however, the sand is regular in its distribution. It is split into two or three persistent lenses that show average depths of about 850,900, and 940 feet with an average interval between the tops of the sands of about 50 feet. The thickness of the sand lenses varies between 2 and 50 feet with an average of about 25 feet. The average thickness of the lenses is difficult to estimate because a great many wells merely penetrate the pay sand and consequently its total thickness remains unknown. Beyond the confines of these areas the sand lenses merge into one another and become even consolidated in the wells listed below:

List of Wells in Which the Robinson Sand is Exceptionally Thick.

Township.	Section.	Quarter-section.	Well number.
Martin.....	1.....	NW.	10
	1.....	SW.	6
	21.....	SW.	13, 18
	22.....	NE.	31
	23.....	NE.	1
	26.....	SE.	8, 13
	27.....	SW.	30
	27.....	SE.	18
	28.....	NE.	6
	34.....	NW.	1, 2, 5, 33
	35.....	NW.	2, 5
Honey Creek.....	6.....	SW.	5
	10.....	SW.	7
	29.....	SE.	3
Oblong.....	2.....	SE.	1
	5.....	NW.	20
	6.....	NE.	6
	7.....	NE.	2
	15.....	NW.	31
	16.....	SW.	12

The maximum thickness of the consolidated sand lenses is 122 feet. In other sections of the field either one, two, or even all the lenses are absent. Those wells in which there is no sand, are as follows:

List of Wells From Which the Robinson Sand is Absent.

Township.	Section.	Quarter-section.	Well number.
Oblong.....	3.....	SE.	1
	5.....	NE.	27
	8.....	NE.	12
	9.....	NW.	9
	18.....	NW.	1, 2
	18.....	SW.	1
	18.....	SE.	2
	31.....	SE.	5
Honey Creek.....	6.....	SE.	1
	22.....	NE.	1
	31.....	SE.	9

The wells in which one or two lenses are absent are too numerous to mention. There are additional lenses of sand both above and below the zone which includes the three persistent lenses. One above is known as the

"gas" or "stray" sand. It is usually from 6 to 20 feet thick and about 20 to 50 feet above the topmost lens of the Robinson sand. This sand produces small quantities of gas in portions of the field, particularly in the northern part of the Hardinville quadrangle. The sand lens lower than the oil zone may belong to the Robinson sand as a fourth lens, so closely is it related to the upper lenses. It is not productive. There are other minor streaks of sand even in the producing zone that add further confusion to correlation.

There is a shallow sand that is productive of oil in section 27, Martin township that may be comparable to one of the shallow Clark county sands. Its extent is very limited.

### DETAILED STRUCTURE OF THE DISTRICT.

Owing to the irregular deposition of sands and shales it was found impossible to correlate and contour any sand beds definitely except the top lens of the Robinson sand which is somewhat persistent over the area. Even this work loses much of its scientific value because parts of it are suppositional through the overlapping and wedging out of this sand bed, as well as those above and below it.

The altitudes of the top lens are assembled and contoured in Plate 5. The general structure of the Robinson pool reveals a broad and gentle arch which is divided into two parts by a transverse basin. The northern part shows the arch to be about 6 miles wide with its crest 95 feet above the lowest explored portions of its limbs. This portion of the arch is subdivided into two crests of the same height. One lies in section 5 and the other in section 10, Oblong township. The southern portion of the arch is about four miles wide and 110 feet high. The crest of this portion lies in section 35, Martin township. The two arches merge into a depressed or synclinal area through sections 13, 14, 15 and 21, T. 6 N., R. 13 W., the bottom of which is 65 feet lower than the crest of the northern arch and 105 feet lower than that of the southern arch. The 1,100-foot contour follows the limits of the pool in a general way and seems to include most of the productive zone.

The contours on the portion of the Honey creek pool shown on the map indicate a lower productive level than the Robinson pool. The heart of the production lies along the 1,080-foot level which is equivalent to the lowest productive levels on the arch of the Robinson pool. This pool is a continuation of the Robinson pool and the difference in oil levels seems to indicate an intervening depression.

The western boundary of the productive field in Crawford county is sharply defined and is marked by an abundance of salt water. It is also worthy of note that there are at least seven wells along this line that show an absence of sands. The western limb of the arch is much the steeper, which fact corroborates previous observations of the LaSalle anticline in its exposure near LaSalle, Ill.<sup>1</sup> It would then follow from the general knowledge of the Illinois basin<sup>2</sup> that the Robinson sands assume a much steeper dip a short distance west of the oil field. The tendency of the sands to remain locally flattened on the east side

<sup>1</sup> Weller, Stuart, The geological map of Illinois: Bull. Ill. State Geol. Survey, No. 6, 1907, p. 12.

<sup>2</sup> Oil resources of Illinois with special reference to the area outside the Southeastern fields: Bull. Ill. State Geol. Survey, No. 16, 1910, pp. 48-51.



of the arch is in keeping with the slope of the arch at LaSalle. The Duncanville and Flat Rock pools lie at about the same general levels as the Honey creek pool and add further evidence to the mild nature of the eastern limb of the anticline.

### RELATIONS OF STRUCTURE TO OIL AND GAS.

The Robinson sands have proved rich in their yield of oil. Of the 2,370 wells mapped in this area but 206 or 8.7 per cent were barren of oil or gas. The range of initial production lies between 1 and about 1,600 barrels. The lower lenses have been slightly more productive than the top lens. The distribution of oil has not been even over the area because of the following factors:

1. The porosity of the sands is variable and in many places they are impervious. The drillers have reported the sands hard and dry and thus incapable of containing oil.

2. The sands thin and thicken commonly and in some localities pinch out altogether. Non-porosity usually accompanies such condition. The light producing and barren streak through sections 2, 3, 4, 9, 8 and 7 Martin township offered evidence supporting this.

3. The sandstones are so closely interbedded and related to the shales along the producing zone that cemented mixtures of the two probably prohibit extensive diffusion of oil, gas, or water in some areas.

4. The best productive areas are attended with thicknesses between 20 and 40 feet of sand and are usually free from large amounts of salt water.

5. Local dry spots in the midst of very productive territory cannot be attributed to small depressions or knolls in the sand bodies but they are explained as due to the thinness and non-porosity of the bed. The following few wells illustrate this fact:

Mar. sec. 26, NW. No. 4.

Mar. sec. 36, SW. No. 5.

Ob. sec. 15, SE. No. 8 and 19.

Ob. sec. 10, NW. No. 12.

Rob. sec. 1, NE. No. 7.

H. C. sec. 6. NE. No. 11.

The top lens of the Robinson sand is especially rich in section 9 of Oblong, section 6 of Honey creek, and sections 1 and 2 of Martin townships. The lower lenses are prolific in sections 21, 22, 23, 34, and particularly 26 and 27, Martin township; 10, 14, 15 and 16, Oblong township, and 6, 10 and 15, Honey creek township. Only about half of the records collected furnished information of the initial yield. Enough data, however, was gathered to indicate the distribution of oil in the various sections of the area. The following table shows the number of wells that furnished data of the production. These are listed under headings of townships, sections, No. 1 and lower lenses, and initial production. The gas and dry wells are also given:



List of Wells in Crawford County, With Initial Productions.

Location.			Number of wells indicating initial production.							
Township.	Section.	Lenses.	0-10 bbls.	10-50 bbls.	50-100 bbls.	100-200 bbls.	200-500 bbs.	Over 500 bbls.	Gas.	Dry.
Martin.....	1.....	No. 1.....	1	2	4	2	1		1	2
		Lower.....	5	10	1		1		2	
	2.....	No. 1.....		5	7	4	9			2
		Lower.....	3	9	3	2	1		1	
	3.....	No. 1.....			1					2
		Lower.....	1	3						
	11.....	No. 1.....								4
		Lower.....	1							
	12.....	No. 1.....			1					2
		Lower.....		3						
	20.....	No. 1.....								5
		Lower.....	1	3						
	21.....	No. 1.....			1	2	2	7		3
		Lower.....	3	6	6	12	14	9		
	22.....	No. 1.....		5			1	1	1	1
		Lower.....	2	16	6	12				
	23.....	No. 1.....	1	4			1		1	8
		Lower.....		12	7	2	1	1		
	24.....	No. 1.....	1	3						2
		Lower.....	3	5	1	1	1			
	25.....	No. 1.....		4						4
		Lower.....	1	4	2	7	1			
	26.....	No. 1.....		1	2		1			1
		Lower.....	1	9	25	18	1	2		
	27.....	No. 1.....		1	2		4			3
		Lower.....	2	2	8	12	6	7		
	28.....	No. 1.....		1	1	1				6
		Lower.....	3	2	1	3	1			
	33.....	No. 1.....								3
		Lower.....	1							
	34.....	No. 1.....		4	3	4	2	1		
		Lower.....		2	5	5	6	5		
	35.....	No. 1.....		1	1				4	1
		Lower.....	2	3	2					
	36.....	No. 1.....		14	6	1				3
		Lower.....	2	7	4	1			1	
	13, 19, 29, 32....	No. 1.....								6
		Lower.....								
Oblong.....	2.....	No. 1.....	2	1						4
		Lower.....	3	8	8		1		1	
	3.....	No. 1.....	2	2	1					3
		Lower.....	1	1	1	1				
	4.....	No. 1.....	1	7	1					1
		Lower.....		3						
	5.....	No. 1.....				3				5
		Lower.....		2	2	8	2	2		
	6.....	No. 1.....								4
		Lower.....	1	3						

*List of Wells in Crawford County, With Initial Productions—Continued.*

Location.			Number of wells indicating initial production.							
Township.	Section.	Lenses.	0-10 bbls.	10-50 bbls.	50-100 bbls.	100-200 bbls.	200-500 bbls.	Over 500 bbls.	Gas.	Dry.
Oblong—Concl'd.	7.....	No. 1.....	.....	1	.....	.....	.....	.....	.....	5
		Lower.....	4	10	.....	1	.....	.....	.....	
	8.....	No. 1.....	3	9	2	1	.....	.....	.....	4
		Lower.....	.....	.....	.....	.....	.....	.....	.....	
	9.....	No. 1.....	1	10	9	7	.....	1	.....	6
		Lower.....	1	2	.....	.....	.....	.....	.....	
	10.....	No. 1.....	1	4	.....	3	1	.....	.....	2
		Lower.....	2	5	9	11	2	.....	.....	
	11.....	No. 1.....	.....	8	.....	1	.....	.....	1	1
		Lower.....	8	6	.....	1	.....	.....	4	
	14.....	No. 1.....	.....	2	1	1	.....	1	.....	6
		Lower.....	.....	5	4	6	3	3	.....	
	15.....	No. 1.....	2	7	1	1	2	1	.....	3
		Lower.....	1	15	12	13	13	.....	.....	
	16.....	No. 1.....	1	2	.....	.....	1	.....	.....	5
		Lower.....	.....	3	5	10	8	2	.....	
	17.....	No. 1.....	3	2	2	.....	.....	.....	.....	7
		Lower.....	1	7	2	.....	.....	.....	.....	
	18.....	No. 1.....	.....	.....	.....	.....	.....	.....	.....	4
		Lower.....	2	8	5	1	.....	.....	.....	
	31.....	No. 1.....	.....	.....	2	1	.....	.....	.....	2
		Lower.....	.....	1	.....	.....	.....	.....	.....	
	32.....	No. 1.....	.....	1	1	1	3	.....	.....	3
		Lower.....	.....	2	3	2	.....	.....	.....	
	33.....	No. 1.....	2	4	.....	4	2	.....	.....	2
		Lower.....	1	.....	.....	.....	.....	.....	.....	
	34.....	No. 1.....	1	3	.....	.....	.....	.....	.....	.....
		Lower.....	.....	.....	1	.....	.....	.....	.....	
	35.....	No. 1.....	2	3	3	.....	.....	.....	.....	1
		Lower.....	.....	4	1	.....	.....	.....	.....	
	1, 11.....	No. 1.....	.....	.....	.....	.....	.....	.....	.....	3
		Lower.....	.....	.....	.....	.....	.....	.....	.....	
Robinson.....	1.....	No. 1.....	1	1	.....	.....	.....	.....	.....	4
		Lower.....	.....	1	.....	.....	.....	.....	.....	
	6.....	No. 1.....	.....	1	.....	.....	.....	.....	1	7
		Lower.....	2	6	.....	.....	.....	.....	.....	
	12.....	No. 1.....	.....	1	1	.....	.....	.....	2	3
		Lower.....	.....	.....	.....	.....	.....	.....	.....	
	13.....	No. 1.....	.....	.....	.....	.....	.....	.....	.....	1
		Lower.....	1	.....	.....	.....	.....	.....	.....	
	36.....	No. 1.....	1	.....	2	.....	.....	.....	.....	3
		Lower.....	.....	6	2	.....	.....	.....	.....	
Honey Creek.....	4, 5, 7, 8, 9, 10, 16, 17, 18, 31, 32, 33.....	No. 1.....	.....	.....	.....	.....	.....	.....	.....	13
		Lower.....	.....	.....	.....	.....	.....	.....	.....	
Honey Creek.....	5.....	No. 1.....	.....	.....	.....	.....	.....	.....	1	4
		Lower.....	.....	1	2	.....	.....	.....	.....	

List of Wells in Crawford County, With Initial Productions—Concluded.

Location.			Number of wells indicating initial production.							
Township.	Section.	Lenses.	0-10 bbls.	10-50 bbls.	50-100 bbls.	100-200 bbls.	200-500 bbls.	Over 500 bbls.	Gas.	Dry.
Honey Creek— Concluded.....	6.....	No. 1.....		3	5	3	1	1		8
		Lower.....		3	5	3	1	2	1	
	10.....	No. 1.....		1		4	1			2
		Lower.....			1					
	15.....	No. 1.....		4	1	1				1
		Lower.....			1					
	16.....	No. 1.....	1	4	1	1				2
		Lower.....	1	3						
	31.....	No. 1.....		4	2				1	4
		Lower.....	7	17	6					
	32.....	No. 1.....							2	8
		Lower.....	4	3	1					
	2, 3, 7, 8, 9, 17, 18, 19, 20, 28, 29, 30, 33, 34..	No. 1.....							17	16
		Lower.....								
	Total.....	No. 1.....	27	130	64	131	32	13	42	206
		Lower.....	71	221	142	46	63	33		

In general throughout the field gas occurs with oil, but not in large quantities. The wells yielded enough for use on the leases and often for drilling but not for commercial use. The thin stray lens above the No. 1 yielded abundant gas, particularly in the northwest corner of Honey creek township. The quantities were from 1,000,000 to 4,000,000 cubic feet daily and under pressures from 200 to 400 pounds to the square inch. These wells are connected to large mains and furnish gas to nearby towns. This same lens is productive of less quantities of gas in sections 2 and 35, Oblong township and 36 and 1, Robinson township.

The contours of the No. 1 lens reveals a small dome on the anticline in section 35, Martin township. Several small gas wells lie about 25 feet down from the crest of the arch or within the 1,160-foot contour. It is true that in Crawford county, as well as in Lawrence county, the best gas wells are not necessarily found on the highest points of the arch but are located on its slopes. Since the oil lies lower structurally than the gas, the same would follow for the oil accumulation. This would perhaps suggest that where the crests of anticlines are known in unproven areas, drilling should be started slightly to either side of the highest point.

RELATIONS OF SALT WATER TO STRUCTURE.

The oil field shows salt water at many points, but particularly along its western limit. Water does not uniformly fill the rocks of the region,

as there are many dry strata, of which some are capable of containing water. Great quantities of salt water occur upon the limbs of the anticline and in the Illinois basin beyond the productive area and at its sharply defined boundaries. All the lenses of the Robinson sand are well saturated along this line, but the upper lenses are generally barren of water within the oil pool. The lower lenses reveal water across the fold and in some portions under the oil. Drilling has proven that the oil lies near the top of the lower sand lenses and consequently but few wells pass through the oil stratum and into the water for fear of drowning out the oil. The water is generally very abundant and seems to be under pressure. Its release from the sand sets up a very rapid flow that is difficult to stop.

The basin which divides the major arch in the Robinson pool is barren of water but is productive of oil. This corroborates the theory as to the accumulation of oil in dry rocks. The first lens, however, is less productive than the lower ones through this basin.

The trough that separates the Honey creek and Robinson pools shows salt water in the scattered dry wells drilled into it. Most of the wells in the portion of the Honey creek pool included in this report were only drilled into the oil pay. The wells that penetrated beneath the pay tapped the salt water zone which would indicate that the water controls the accumulation of the oil and instrumental in holding it captive in its present position.

The eastern side of the oil field also shows abundant water in the lower lens but apparently not so much as at the corresponding level on the steeper limb of the arch. Both water and oil are irregularly distributed on the east limb of the anticline.

#### CONCLUSION.

It is obvious from the position of the water and oil along the LaSalle anticline that the water has controlled the accumulation of oil in the arch. The water probably has been a means of originally collecting and causing the oil to migrate from long distances up the slope of the arch and into its crest. This is effective for all lenses of the Robinson sand. The degree of saturation is variable over the crest of the arch. The lower lenses are frequently reported saturated with water through the field whereas, for the most part, the upper lens shows little saturation.

## CHAPTER IV.

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### Detailed Geology of the Lawrence County Field.

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#### GENERAL FEATURES OF THE OIL FIELD.

The shape and extent of the oil field in Lawrence county is shown in Plate VI, the base map of the area. The development is indicated to July 1, 1911. The field has a northwest and southeast trend with its northern limit exactly on the Lawrence-Crawford county line and its southern-most extremity in sections 11 and 12, T. 2 N., R. 12 W. The pool is continuous for 17 miles, although it is thinly developed at both ends. It is about  $2\frac{1}{2}$  miles wide from the county line to about 9 miles south. It then broadens and includes the Dennison township fields in a width of about 5 miles and narrows again at the extreme southern end to about 3 miles. The field changes its course on the vicinity of Bridgeport from about north 24 degrees west to north 44 degrees west, or 20 degrees.

The western edge of the oil field is similar in character to that of Crawford county, in that it is almost abrupt and uniform, except for a small detached area in sections 20, 29 and 30, Bridgeport township. This extension of the field is due to a small terrace on the western slope of the anticline, indicated later in one of the cross-sections. The eastern edge of the field, like that of Crawford county, is very irregular and is probably due to the flattening of that side.

The Lawrence county field is the richest of the eastern Illinois fields. It has produced more large wells than the rest of the fields combined and its wells have maintained steadier production than those of any other locality in the State. This field is prominent because of its large number of producing sands ranging in depth from 800 to 1,900 feet, or from the top of the Pottsville rocks in the Pennsylvanian series to the top of the hard and thick St. Louis limestone of the Mississippian series. There is a shallow sand at about 450 feet that produces oil but its distribution is limited to a very small area in sections 2 and 3, Dennison township. The other producing sands are in order of depth, the three Bridgeport lenses, Buchanan, "Gas," Kirkwood, Tracey and McClosky sands.

## DETAILED STRUCTURE OF THE DISTRICT.

## THE "SHALLOW" SAND.

A shallow sand is productive in sections 2 and 3, T. 2 N., R. 12 W. It lies at a depth of from 444 to 485 feet or from 25 feet above sea level to about 17 feet below. The initial production was light, averaging about 12 barrels per day. This sand is thought to be the equivalent of a shallow sand in section 27, Martin township, Crawford county and possibly of one of the Clark county sands. Further details of the sand are found in the tables of well data.

## BRIDGEPORT SAND.

The Bridgeport sand derived its name from the town of Bridgeport near the middle of the Lawrence county field. The first well in this field and in this sand was drilled by the Big Four Oil Company in July, 1906, on a narrow strip of land north of the Baltimore, Ohio and Southwestern Railroad and south of the public road in Bridgeport. At the same time that the well was drilled the land belonged to the town of Bridgeport.

The Bridgeport sand is widely developed both north and south of the town. The initial productions of the sand are good. This fact, together with the shallow depth at which the oil is found, attracted attention to the field as a very promising area for exploration. The sand is found over the whole field but is especially productive of oil in sections 31, 32, 5, 6, 7, 8 and 17, Bridgeport township. It is productive of good pressures of gas and some oil in sections 34, 35, 3 and 2, Dennison township.

The Bridgeport sand is lenticular and closely resembles the Robinson sand. In fact it seems to correspond to that sand in position and physical features as shown in the discussion of the stratigraphy of the two counties, page 83. This sand comprises three general lenses and some smaller ones in several parts of the oil field. The depths of the sands vary between 600 and 1,000 feet. Thus a range of depth is due to a sharp uplift of the LaSalle anticline and to the irregularity in the surface. It is impossible to average the thickness of the lenses for the whole of the county, so great is their variability. Some of the lenses are but a few feet thick and others are over 300 feet thick. North of Bridgeport they average about 35 feet. In the other areas of good production, the pay lenses have a wide range of thickness. It is also impossible to average the interval between lenses because of the wide difference over the field. The records in many instances show that the lower lenses of the Bridgeport sand merge into the massive sandstone that is characteristic of the Buchanan or basal portion of the Pottsville rocks.

No attempt was made to show the structure of this horizon by means of contours or cross-sections because of the uncertainty of correlation. Moreover the lack of sufficient detailed logs also prohibited any general conclusions as to the distribution of the sand. The oil and salt water relations are discussed later.

## BUCHANAN SAND.

The Buchanan sand is the next producing sand lower than the Bridgeport. It was first discovered in September, 1906, by the Ohio Oil Company on the R. O. Buchanan farm in the S.  $\frac{1}{2}$  S. E.  $\frac{1}{4}$  Sec. 16, Lawrence township. The pay was found at 1,332 feet. The type area for the sand lies in sections 15 and 16 Lawrence township; sections 21 and a portion of 22, Dennison township; and sections 17 and 20 of Bridgeport township. Data of the sand are very scattered over the rest of the field. There are enough facts known, however, to show the general structure up to and including sections 24, 19 and 20, Petty township. The information north of these sections is scant and unreliable because of the association of the Buchanan sand with the upper Bridgeport lenses.

The Buchanan sand comprises the basal part of the Pottsville rocks and is characterized by thick or massive sandstones over most of Illinois. These rocks mark the lowest portion of the Pennsylvanian series and lie unconformably on the Chester or upper division of the Mississippian rocks. Most of the well data in the tables indicate shallow penetration into this sand, which was tapped and entered a short distance in order to provide for a sufficient and safe shot. The oil zone is usually underlain with salt water, which, if tapped, offers danger of drowning the oil. In some localities of the State this sand is called the "Salt sand" because saturated with salt water. This sand has been one of the most prolific producers of oil in the Illinois fields. Its wells have yielded large quantities of oil and but little gas.

## DETAILED STRUCTURE.

The altitudes of the top of the Buchanan sand were assembled and contoured in Plate VII. In some localities of the field wells giving data were so far apart that it was not justifiable to draw definite contour lines. The dashed lines were substituted to indicate the approximate structure.

The general structure of the Buchanan sand reveals a very irregular surface. The type area of the sand is the most completely drilled. Data from this locality shows two small, symmetrical, domes, one in section 17, Bridgeport township and the other in sections 15 and 16, Lawrence township and section 21, Dennison township. The west dome (section 17) is 107 feet high. It is enclosed by the 640-foot contour line and covers about  $1\frac{1}{4}$  square miles. The crest of the dome lies in the SW. cor., NE.  $\frac{1}{4}$  sec. 17. The second dome is 99 feet high and is also enclosed by the 640-foot contour. It covers about 2 square miles of area. Its crest lies along the W.  $\frac{1}{2}$  SW.  $\frac{1}{4}$  sec. 15, Lawrence township.

The sand dips rapidly from the first dome in the type area toward the southwest. From the crest of this dome to Bport., sec. 30 SE., No. 3, the dip is 262 feet in about  $2\frac{1}{2}$  miles or at the rate of 105 feet per mile. This rapid dip merges into a minor terrace in the lower sands in the NW. cor., sec. 29, but is not shown for the Buchanan sand.

The structure is very irregular east and south of the type area of the Buchanan sand. The contours range from 600 to 760 feet. They show



a general dip to the east. The west side of this part of the field is high structurally but unproductive.

The Buchanan sand dips sharply north of the type area and then gradually rises into an uplift of the main axis of the LaSalle anticline that has the appearance of a narrow double plunging anticline. The apex of this dome-like structure lies near the center of section 30, Petty township. The rise to the north from Bport., sec. 17, NE., No. 15 to Pet. sec. 30, SE., No. 66 is 368 feet in  $3\frac{3}{8}$  miles, or at the rate of 108 feet per mile. The sides of the dome dip very steep to the west and east from its apex, with the steeper slope to the west. The dip along the C-C cross-section from Pet. sec. 30, SE., No. 66 to Bport. sec. 36, SE., No. 3 is 328 feet in  $1\frac{1}{8}$  miles, or at the rate of about 290 feet per mile. The dip east from the crest of the dome to Pet. sec. 20, SE., No. 7 along the same cross-section is 223 feet in  $1\frac{1}{4}$  miles, or at the rate of 178 feet per mile. The western side of the dome dips 112 feet more per mile than the eastern side. This is in keeping with the nature of the LaSalle fold exposed near LaSalle. The structure contours reveal a rapid plunge of the sand from the dome to the north and then a rise into a second dome with a crest 22 feet lower than the major uplift. The dip from the crest of the first dome to Pet. sec. 30, NE., No. 22, at the bottom of the basin, is 123 feet in about one-half of a mile. The rise from the bottom of the basin to Pet. sec. 19, SE., No. 38, the crest of the second dome, is 101 feet in about three-fourths of a mile. The contours indicate a uniform dip northward from the second dome. The dip of this sand along the western side of the anticline is uniform.

A small though conspicuous terrace interrupts the long sweeping rise from the type area of the Buchanan sand into the dome in Petty township. It lies in sections 7 and 8, Bridgeport township along the 700-foot contour. The area covers about one-half of a square mile. The wells yielded good initial productions of oil.

#### "GAS" SAND.

The "Gas" sand is so named because it produces small amounts of gas wherever encountered, though in some instances it is productive of oil. The sand underlies the Buchanan sand and is usually the first or second sand in this district penetrated in the Mississippian or, specifically, the Chester rocks. There are 36 wells in the area that furnish data for both Buchanan and "Gas" sands and from these the average interval between these sands is found to be 198 feet.

The sand is definitely correlated from section 36, Petty township to sections 5 and 6, Bridgeport township. Without detailed knowledge of the plunging anticline in section 30, Petty township or the stratigraphy of the area, the oil men have confused the "Gas" sand with the upper sands, particularly with the Buchanan bed, and in some instances with the Kirkwood sand beneath. The relations of this sand to the others of the region are geographically shown in cross-sections A-A, B-B, and C-C.

The average thickness of the "Gas" sand estimated from data furnished by 245 wells is 16 feet with a range from 1 to 68 feet.

The "Gas" sand produces gas over most of the contoured area. The amounts were not reported.

#### DETAILED STRUCTURE.

The altitudes of the top of the "Gas" sand were assembled and contoured in Plate VIII. The structure of this sand is the most regular of any in this field, with the exception of the Kirkwood. The contours indicate a uniform dip of the sand along the east and west flanks of a strongly defined anticline. The structure further confirms the double plunging of the major fold both to the north and south. The highest point of the anticlinal dome is in Pet., sec. 30, NE., No. 5. The dip to the north from this point to Pet., sec. 36, NW., No. 12, is 232 feet in slightly over 5 miles or at the rate of about 46 feet per mile. The decline to Bport., sec. 17, NE., No. 39, is 246 feet in  $4\frac{3}{8}$  miles or at the rate of about 56 feet per mile. The western dip from the crest to Bport., sec. 36, SE., No. 8, is 321 feet in  $1\frac{3}{4}$  miles or at the rate of 183 feet per mile. The dip eastward from the crest to Pet., sec. 29, NE., No. 7, is 210 feet in seven-eighths of a mile.

The two lowest points along the western flank of the anticline conform to the 440-foot contour. The field is bounded by the 500-foot contour on the west and the 600-foot contour on the east. The contours south of the north line of sections 5 and 6, Bridgeport township, were broken because the data was scattered and somewhat indefinite.

#### KIRKWOOD SAND.

The Kirkwood sand was first developed in 1907 by the Burton Bros. Oil Company on the Thomas Kirkwood farm in the E.  $\frac{1}{2}$  NE.  $\frac{1}{4}$  sec. 14, Lawrence township, now known as the R. M. Kirkwood farm and operated by the Bridgeport Oil Company. This sand is the most widely developed and productive of any in the Lawrence county field. It extends from section 36, Petty township, to section 8, Dennison township and spreads into all outlying pools, thus indicating the shape and extent of the Lawrence county field.

The Kirkwood sand is the most widespread sand that is productive of oil in the Illinois basin. It is the equivalent of the Sparta sand of Randolph county, the Lindley gas sand of Greenville, the Carlyle oil sand of Clinton county, the Benoist sand of Marion county, and the Oakland City sand of Pike county, Indiana. This sand lies low in the Chester series and is usually overlain by a succession of shales, limestone, some sandstone, and at least two and often three red shales. The second red shale usually serves as its horizon marker as the red rock is easy to distinguish because it discolors the water used in drilling.

The Kirkwood sand is lenticular in some portions of the field. It is subdivided into two and often three thin lenses. The surface of the top lens, however, is uniform over the county and is taken as a basis of contouring.

The sand shows excellent initial productions and has promise of being long lived and steady in its yield. It is the most reliable of all the sands. There is little or no gas yield from it except close to the

northern limits of the county. The oil is a "sweet" oil containing a small percentage of sulphur and has about 36° gravity, Beaume.

There are three areas in the field where this sand is especially productive. The type locality includes sections 11, 12, 14, 15, Lawrence township and sections 22, 23, 25, 26 and 36, Dennison township. The next important area lies about the anticlinal dome spoken of under the discussion of the upper sand beds of the field, page 107. This area includes sections 19, 20, 29 and 30, Petty township, and sections 6, 31, 32 and 36, Bridgeport township. A less important area is well developed in parts of sections 7, 8, and 17, Bridgeport township.

Data from 220 wells in the Lawrence county field indicate an average interval of 67 feet between the Kirkwood and "Gas" sands in the upper part of the field, and 243 wells indicate an average interval of 265 feet between the Kirkwood and Buchanan sands in its lower part, where the "Gas" sand is not correlated. The average interval between the Kirkwood and "Gas" sands in 157 wells in Petty township is 63 feet. There are 63 wells in the northern part of Bridgeport township that show an average interval of 78 feet between the two sands. The range of interval lies between 26 and 134 feet.

The intervals between the Kirkwood and Buchanan sands were calculated for that portion of the field south of Petty township. Those in Petty township were not averaged because of the uncertainty of correlation of the Buchanan sand.

There are 85 wells in Bridgeport township that show an average interval of 255 feet between the two sands; 57 wells in Lawrence township with an interval of 244 feet; and 101 wells in Dennison township with an average interval of 287 feet. The interval therefore seems to increase toward the southern end of the field. There are eight wells on the terrace in sections 20, 29 and 30, Bridgeport township that show an average interval of 450 feet between the sands. This seems to indicate a rapid thickening of the formations as they dip west into the Illinois basin, adjacent to the LaSalle anticline. The wells in the eastern extension of the field in sections 11 and 12 of Lawrence township indicate a lessening of interval between the sands and an average of about 200 feet.

The thickness of the Kirkwood sand is very irregular over the field. It is found to average about 30 feet in those wells that pass through the sand.

#### DETAILED STRUCTURE.

The altitudes of the top lens of the Kirkwood sand were assembled and contoured in Plate IX. The contours on this sand give a most complete and satisfactory idea of the structure of the LaSalle fold. The information was abundant and widely distributed.

The upper part of the field from sections 35 and 36, Petty township, to and including sections 7 and 8, Bridgeport township, shows an elongated dome or double plunging anticline. The actual top of the dome lies around Pct. sec. 30, SE., No. 55. The sand dips in four directions from this well. The general crest lies within the 680-foot

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contour and has an areal extent of about 80 acres. A part of it overlaps into section 29, Petty township. The sand dips 240 feet northward along the A-A cross-section, between the crest and Pet. sec. 35, NE., No. 2, a distance of  $5\frac{3}{4}$  miles. The rate of dip is 41 feet per mile. The dip to the east along the C-C cross-section to Pet. sec. 20, SE., No. 10, is 219 feet in  $1\frac{1}{8}$  miles or 194 feet per mile. The dip to the west along the same cross-section to Bport. sec. 36, SE., No. 8, is 342 feet in  $1\frac{1}{2}$  miles or at the rate of 228 feet per mile. The southward dip of the sand through the center of the field to Den. sec. 22, NW., No. 5, is 335 feet in  $5\frac{1}{4}$  miles or at the rate of 63 feet per mile.

The dome-like structure merges into a mild trough in sections 4, 9, 10, Lawrence township, and sections 21 and 22, Dennison township. The sand then lies flat to the south through Lawrence and Dennison townships forming a broad plateau-like crest of the major fold. The sand lies at a uniform level at about the 400-foot contour. The sands on both sides of the field and to the south dip toward the limbs of the major fold. The southern limits of the field seem to gradually drop lower than the producing zone of the sand. Whether the major fold continues to drop, until it merges into the southeastern side of the eastern interior coal basin or whether the drop is local, as seems to be the case between Crawford and Lawrence counties, is not known. At any rate the anticline loses much of its identity as a structural fold, thus suggesting its mergence into the rim of the basin.

The terrace in sections 20, 29 and 30, Bridgeport township, previously spoken of, is prominently shown by the Kirkwood sand contours. It seemingly covers an areal extent of about 240 acres and lies between the 100 and 120-foot contours. This is about 300 feet lower than the producing sand in the Kirkwood area of Dennison township, three miles east. Further drilling will possibly extend production until the area will cover several times its present extent.

#### TRACEY SAND.

The Tracey sand was first developed in 1908 by Busch and Everett in the R. J. Tracey farm in the NW.  $\frac{1}{4}$ , NE.  $\frac{1}{4}$ , sec. 13, Lawrence township. This sand is not found widely productive of oil. The type localities lie in sections 11 and 14, Lawrence township; sections 25 and 26, Dennison township; and sections 19 and 30, and sections 25, 26, 35 and 36, Petty township.

This sandstone is soft and calcerous. It overlies the Ste. Genevieve and massive St. Louis limestones, which the oil men often call the "big lime." The Tracey sand lies in the basal portion of the Tribune formation and does not correspond to the Cypress sandstone, as has been suggested by the author in his earlier studies of the stratigraphy of the area.<sup>1</sup>

Data from 194 wells over the entire field indicate an average interval of 114 feet between the Kirkwood and the Tracey sands. The average interval for each of the townships is shown in the following table:

<sup>1</sup> Economic Geology, Vol. VII, No. 6, September, 1912, p. 579

*Intervals Between Kirkwood and Tracey Sands.*

Township.	Number of wells giving data.	Average interval between the Kirkwood and Tracy sands in feet.
Dennison.....	65	105
Lawrence.....	21	111
Bridgeport.....	30	118
Petty.....	78	120

The interval seems to widen as the sands dip into the limbs of the anticline. The interval in Pet. sec. 15, NE., No. 1, is 160 feet and in Pet. sec. 23, NE., No. 1, 210 feet. The intervals lessen to the north to about 40 feet. This fact is borne out by the A-A cross-section.

The Tracey sand yields excellent pressures of gas in the northern half of the field. The gas has a rank odor in consequence of its large sulphur content, and the oil is "sour." This sand is so closely associated with the underlying limestones that its oil and gas probably had its origin from them.

## DETAILED STRUCTURE.

The altitudes of the top of the Tracey sand were assembled and contoured on Plate X. The data were too scattered to warrant well defined contouring, hence many of the contour lines are broken to indicate merely the general trend of the structure. Only the type localities mentioned above justified continuous contour lines. The structure of the sand closely resembles that of the overlying Kirkwood except that the dips are not so pronounced. As with the other sands, the Tracey conforms to the dome-like structure in Petty township. The crest of the dome lies at Pet. sec. 30, SE., No. 63. The dip northward to Pet. sec. 26, NE., No. 2, is 247 feet in  $6\frac{5}{8}$  miles or at the rate of 37 feet per mile. The sand appears very flat in parts of sections 12, 13, and all of 18, about  $1\frac{1}{2}$  miles north of the apex of the dome. The fold dips equally about 240 feet to both sides of this flat. The dip south from the apex of the dome to Law. sec. 10, SW., No. 1, is 283 feet in  $3\frac{7}{8}$  miles or at the rate of 73 feet per mile. The Tracey, like the Kirkwood horizon, assumes a plateau-like nature on the crest of the anticline to the south of the last mentioned well.

## McCLOSKEY SAND.

The McClosky sand was developed by the International Oil and Gas Company on the M. McClosky farm in the NW.  $\frac{1}{4}$  SE.  $\frac{1}{4}$  section 25, Dennison township. The type locality for this sand lies in sections 25 and 36, Dennison township. It is also productive at the same level in sections 11, 12, 13 and 14, Lawrence township. This formation is extensively developed in a long narrow strip beginning in the NE.  $\frac{1}{4}$  section 6, Bridgeport township and extending through the middle of the field into section 19, Petty township. The McClosky sand is widely developed in the northern end of the field in sections 1, 7, 11, 12, 13, 18, 25, 35 and 36, Petty township.



The McClosky sand is a soft oolitic limestone known as the Ste. Genevieve. This limestone underlies the Cypress and Chester rocks and overlies the massive and hard St. Louis limestone. The contact between the overlying Chester and the Ste. Genevieve in Lawrence county is well defined but the lower portion of the Ste. Genevieve merges into the St. Louis. In many places the two limestones can be distinguished only by the difference in their hardness and the presence of oolites in the Ste. Genevieve.

Data from 150 wells in the Lawrence county field show an average interval of 104 feet between the McClosky and Tracey sands. The average interval in each of the townships is shown in the following table:

*Intervals Between Tracey and McClosky Sands.*

Township.	Number of wells giving data.	Average intervals between the Tracey and McClosky sands in feet.
Dennison.....	43	113
Lawrence.....	14	118
Bridgeport.....	15	105
Petty.....	78	96

The interval widens perceptibly as the sand dips into the limbs of the anticline. The interval in Pet. sec. 15, NE. No. 1, is 174 feet and in Pet. sec. 23, NE., No. 1, is 175 feet.

The McClosky sand has yielded the largest initial productions of any of the producing sands in Illinois. It is not widely developed because of the large expense incurred in drilling. The wells in the northern section of the field have been good producers and have yielded some gas. The oil and gas have a large sulphur content. The southern part of the field has yielded several oil gushers and but one or two gas wells. The oil has a much smaller sulphur content than that from the northern portion of the field.

DETAILED STRUCTURE.

The altitudes of the top of the McClosky sand were assembled and contoured in Plate XI. The contours reveal one major and three minor domes along the crest of the anticline. The first dome lies at the northern boundary of the county, in sections 25 and 36, Petty township. It falls within the 320-foot contour. The top of the dome covers about three-fourths of a square mile.

The sand dips from this dome into a basin about 90 feet deep and then gradually rises into a terrace through sections 12, 13, 18 and 19, Petty township. The terrace merges rapidly into the major dome of the fold in section 30, Petty township. The top of the dome lies at Pet. sec. 30, SE., No. 59. The dip from the apex eastward to Pet. sec. 20, SE., No. 10, is 164 feet in 11/8 miles, or at the rate of 145 feet

per mile. The dip westward to Bport. sec. 31, SW., No. 5, is 218 feet in  $1\frac{1}{8}$  miles, or at the rate of 193 feet per mile. The west dip of the fold is 45 feet greater than the east dip for the same distance. There are two very small domes or sharp pinnacles in the sand immediately south of the major uplift. The crests of these lie at Pet. sec. 32, SW., Nos. 10 and 17. The sand lies at 413 and 418 feet respectively above the assumed datum plane of 1,500 feet below sea level or only 27 feet below the top of the largest dome.

The data are scanty along the sides of the main anticline and therefore the contours are dashed. They show strong dips to both sides of the field and a long gentle dip to its southern end. The structure of the sands in the southern half of the field is very similar to that of the Kirkwood and Tracey sands. The crest of the anticline merges from the major dome into an extensive flat area which lies uniformly around the 160-foot contour.

## CROSS-SECTIONS.

### GENERAL STATEMENT.

Four cross-sections were constructed along lines that pass through and across the Lawrence county field. They were chosen especially with respect to the structure of the area, as it is desired to show the nature of the crest of the LaSalle anticline as well as the flanks. The sections were also chosen along lines that pass through or near a large number of wells.

The cross-sections were constructed by plotting records with respect to sea level. A line representing sea level was drawn, and another representing an ideal surface 500 feet above it. This is marked off to correspond with the points where the line crosses section or township lines. The names of the townships are placed in their proper positions. The records of the wells were located with respect to their position along the line and above sea level. They were then plotted with uniform symbols and scale. Wherever the cross-section line cut a contour line the altitude of the contour was marked with a cross and set in its proper position. Correlation lines were then drawn through all crosses representing the altitude of a particular sand and between similar formations in detailed records. Since a datum plane 1,500 feet below sea level was used to make the contouring read positive this line is drawn on the sections merely to emphasize its use. The position of any sand can be measured directly above the datum plane line and the figures thus obtained should correspond with those obtained from the structure maps and those recorded in the tables of well data.

### CROSS-SECTION A-A.

The A-A cross-section, Pl. XII, presents the structure of the sands along the crest of the anticline and through the middle of the entire Lawrence county field. As a whole the section is especially valuable since it shows the double plunging anticline, the crest of which lies in section 30, Petty township, the convergence of the sands at the northern end, and the dip from the dome into the flat at the southern end of the

field. The sands are shown to be generally parallel with local irregularities that seem due, in most cases, to the thinning and thickening of the sand. All sands conform to a mild basin at the foot of the elongated dome in sections 9 and 16, Lawrence township.

LOGS.

The section is made up from many skeleton logs which are found in the tables of well data. The detailed logs are presented below.  
The records of the following wells are found in the tables:

List of Wells in Lawrence County Furnishing Data for Cross-Section A-A.

Township.	Section.	Quarter-section.	Well number.
Petty	26	NE.	1
	26	SE.	4
	35	NE.	2
	36	NW.	11
	36	SW.	5
	36	SW.	6
	12	NE.	4
	12	NE.	5
	12	NE.	6
	12	NE.	14
	12	NE.	12
	12	SE.	10
	12	SE.	9
	18	NW.	17
	18	NW.	16
	18	NW.	15
	18	SW.	1
	18	SW.	3
	19	NW.	3
	19	NW.	4
	19	NW.	5
	19	NW.	6
	19	SW.	21
	19	SE.	19
	19	SE.	16
	19	SE.	14
	19	SE.	3
	30	NE.	13
	30	NE.	15
	30	NE.	26
	30	SE.	60
	30	SE.	59
	30	SE.	69
	30	SE.	76
Bridgeport	32	NW.	35
	32	NW.	33, 34
	32	SW.	23
	32	SW.	26
	5	NW.	9, 10
	5	NW.	4
	5	NE.	10
	5	NE.	9
Lawrence	5	SE.	15
	9	SW.	15
	9	NE.	4
	15	NW.	12
	15	NW.	11
	15	NW.	7
	15	SW.	22
	15	SW.	20
Dennison	15	SE.	1
	22	NE.	4
	22	NE.	8
	23	SW.	1
	23	SW.	5
	26	NW.	1
	26	NE.	14
	26	NE.	10
	26	SE.	15

List of Wells in Lawrence County—Concluded.

Township.	Section.	Quarter-section.	Well number.
Dennison—Concluded..	25.....	SW.	2
	25.....	SW.	3
	36.....	NW.	2
	36.....	NE.	13
	36.....	SE.	19
	36.....	SE.	16
	36.....	SE.	9
	6.....	NW.	5
	6.....	NW.	4
	6.....	SE.	1
	8.....	NW.	1
	8.....	NW.	2

The following logs are those shown in detail in the cross-section and briefly referred to in the tables:

Pet. sec. 36, SW., No. 8.

Operator—Snowden Bros.  
Farm and well—Petty, No. 1.  
Elevation—436 feet.

	Thickness Feet	Depth Feet
Sand and gravel, loose .....	112	112
Slate, blue, soft .....	68	180
Limestone, gray, hard (3 bailers water, 190 feet).....	10	190
Slate, brown, soft .....	110	300
Limestone, yellow, hard .....	6	306
Slate, blue .....	10	316
Slate, brown, hard .....	124	440
Slate, black, soft .....	10	450
Coal .....	4	454
Shells .....	15	469
Slate, white, hard .....	55	524
Shell, blue, hard .....	5	529
Coal .....	5	534
Slate, blue, soft .....	56	590
Shale, white, hard .....	15	605
Shale, brown, soft .....	85	690
Slate, black, soft .....	10	700
Slate, blue, soft .....	10	710
Slate, brown, hard .....	15	725
Limestone, white, hard .....	10	735
Shale, white, soft .....	10	745
Limestone, blue, hard .....	20	765
Shells, hard .....	15	780
Limestone, red, soft .....	5	785
Slate, blue, soft .....	10	795
Limestone, blue, hard (2 bailers water, 800 feet).....	5	800
Slate, blue, soft.....	15	815
Limestone shells, gray, hard.....	20	935
Slate, black.....	35	870
Sand, white (10 bailers water per hour, 885 feet).....	15	885
Slate and shells, blue.....	35	920
Sand (hole full of water, 980 feet).....	60	980
Slate, blue, soft.....	25	1,005
Sandy shale, brown.....	90	1,095
Sand, white, soft.....	8	1,103
Slate, black.....	10	1,113
Sand, gray, hard.....	62	1,175
Slate, black.....	10	1,185
Sand, white.....	35	1,220
Slate, brown, soft.....	20	1,240
Sand, loose.....	15	1,255
Slate, light brown, soft.....	5	1,260
Limestone, hard.....	5	1,265
Sand, white, hard.....	10	1,275
Limestone, gray, hard.....	10	1,285
Slate, blue, soft.....	13	1,298
Sandy limestone.....	28	1,326
Oil sand.....	10	1,336

*Logs—Continued.*

	Thickness Feet	Depth Feet
Slate, blue, soft.....	10	1,346
Limestone, yellow, hard.....	20	1,366
Oil sand, white, soft.....	26	1,392
Limestone, gray.....	8	1,400
Sand, white, oil.....	12	1,412
Slate, blue, soft.....	10	1,422
Total depth.....	.....	1,422
Initial production, 125 bbls.		

*Pet. Sec. 36, SW., No. 10.*

Operator—Snowden Bros.  
Farm and well—Petty, No. 3.  
Elevation—435 feet.

	Thickness Feet	Depth Feet
Sand, white, soft.....	100	970
Slate, blue, soft.....	130	1,100
Limestone, light, hard.....	15	1,115
Sand, white, hard.....	100	1,215
Slate, blue, soft.....	10	1,225
Limestone, gray, hard.....	5	1,230
Sand, white, hard.....	15	1,245
Slate, white, soft.....	5	1,250
Limestone, light, hard.....	30	1,280
Slate, white, soft.....	5	1,285
Limestone, light, hard.....	20	1,305
Slate, light brown, soft.....	5	1,310
Sand, hard (oil 1,328 to 1,332 feet).....	22	1,332
Slate, light brown.....	15	1,347
Limestone, gray, hard.....	17	1,364
Slate, blue, soft.....	3	1,367
Sand, white, soft (oil 1,375 to 1,387 feet).....	20	1,387
Slate, blue, hard.....	5	1,392
Limestone, hard.....	10	1,402
Sand, white, soft.....	12	1,414
Limestone, blue, hard.....	21	1,435
Total depth.....	.....	1,435

*Pet. sec. 1, NW., No. 3.*

Operators—Snowden Bros.  
Farm and well—Drole, No. 7.  
Elevation—435 feet.

	Thickness Feet	Depth Feet
Clay, soft.....	18	18
Sand and gravel, soft.....	96	114
Slate, soft.....	108	232
Sand, hard.....	10	242
Shell, hard (water).....	23	265
Slate, white, hard.....	95	360
Slate, dark, hard.....	60	420
Shell, hard.....	5	425
Coal.....	6	431
Slate, light, soft.....	269	700
Shell, light, hard.....	25	725
Slate, light, dark, red and blue, soft.....	90	815
Sand, hard (water).....	25	840
Slate, light, soft.....	10	850
Sand, white, loose.....	45	895
Slate, light, soft.....	5	900
Sand, white, hard.....	63	963
Slate, light, soft.....	50	1,013
Slate, dark, hard.....	40	1,053
Limestone, gray, hard.....	7	1,060
Slate, light, soft.....	50	1,110
Sand, gray, loose (water, 1,150 to 1,240 feet).....	40	1,150
Sand, white, hard.....	90	1,240
Limestone, gray, hard.....	30	1,270

Logs—Continued.

	Thickness Feet	Depth Feet
Slate, dark.....	20	1,290
Slate, light, loose.....	28	1,318
Oil sand, gray, loose.....	8	1,326
Slate, dark, hard.....	12	1,338
Limestone, gray, hard.....	25	1,363
Sand, white, loose.....	12	1,375
Slate, black, hard.....	9	1,384
Sand, white, hard.....	18	1,402
Oil sand.....	10	1,412
Slate, dark, hard.....	2	1,414
Limestone, gray, hard.....	17	1,431
Total depth.....	.....	1,431

Pet. sec. 1, SW., No. 5.

Operators—Snowden Bros.  
Farm and well—Piper, No. 9.  
Elevation—435 feet.

	Thickness Feet	Depth Feet
Soil .....	18	18
Mud, blue, soft.....	4	22
Slate, light, soft.....	34	56
Sand, white, soft (water).....	2	58
Slate, light, soft.....	57	115
Coal .....	2	117
Slate, light, soft.....	123	240
Limestone, white, soft.....	6	246
Slate, white, soft.....	59	305
Slate, black.....	20	325
Slate, white.....	30	355
Limestone, white, hard.....	8	363
Slate, white, soft.....	15	378
Slate, black.....	32	410
Slate, light.....	10	420
Coal .....	3	423
Limestone, white, hard.....	3	426
Slate, black, soft.....	42	468
Sand, white, soft.....	7	475
Coal .....	4	479
Slate, white.....	21	500
Slate, brown.....	52	552
Slate, white.....	20	572
Sand, white, hard.....	6	578
Slate, white, soft.....	17	595
Slate, brown.....	45	640
Slate, black.....	12	652
Slate, light.....	33	685
Limestone, white, hard.....	5	690
Sand, white, hard.....	10	700
Slate, white, loose.....	10	710
Slate, brown, loose.....	40	750
Limestone, white, hard.....	10	760
Slate, white, soft.....	5	765
Slate, black.....	30	795
Limestone shell, hard.....	10	805
Sand, brown, open.....	11	816
Shale .....	8	824
Sand, white.....	15	839
Limestone, gray.....	12	851
Sand, white.....	122	973
Slate, black.....	41	1,014
Limestone shell, hard.....	5	1,019
Slate .....	120	1,139
Sand, white, soft.....	68	1,207
Limestone shell, hard.....	28	1,235
Red rock.....	10	1,245
Slate, black.....	7	1,252
Limestone, white, hard.....	23	1,275
Slate, black.....	25	1,300
Sand, gray.....	12	1,312
Slate, black.....	14	1,326
Total depth.....	.....	1,326

Initial production, 90 bbls.

*Logs—Continued.**Pet. sec. 30, NE., No. 9.*

Operators—Bridgeport Oil Company.

Farm and well—Boyd, No. 11.

Elevation—452 feet.

	Thickness Feet	Depth Feet
Mud and slate.....	44	44
Limestone .....	6	50
Slate .....	20	70
Sand .....	20	90
Slate .....	55	145
Limestone .....	15	160
Slate .....	5	165
Sand .....	25	190
Slate .....	10	200
Limestone, hard.....	5	205
Slate .....	45	250
Sand .....	40	290
Slate .....	50	340
Coal .....	5	345
Slate .....	55	400
Limestone shell.....	10	410
Coal .....	5	415
Slate .....	100	515
Sand .....	5	520
Coal .....	3	523
Shale, brown.....	32	555
Sand .....	30	585
Slate .....	15	600
Limestone shell.....	8	608
Sand .....	64	672
Slate .....	28	700
Limestone shell.....	5	705
Slate .....	75	780
Limestone shell.....	5	785
Slate .....	45	830
Stray sand.....	13	843
Slate .....	33	876
Sand .....	4	880
Sand, broken.....	15	895
Oil sand (best oil, 933 to 950 feet).....	57	952
Total depth.....	.....	952

*Pet. sec. 30, SE., No. 50.*

Operators—Curtis and Akin.

Farm and well—Fitch, No. 17.

Elevation—475 feet.

	Thickness Feet	Depth Feet
First water at.....	.....	120
Red rock at.....	.....	217
Sand at.....	.....	612
Bottom of sand.....	78	690
Slate .....	34	724
Limestone shells.....	4	728
Sand (show of oil, 773 feet).....	124	852
Slate .....	53	905
Sand (oil, 945 feet).....	90	995
Slate .....	65	1,060
Sand .....	45	1,105
Sand and limestone.....	20	1,125
Red rock.....	1,159 to	1,166
Slate .....	4	1,170
Limestone .....	20	1,190
Slate .....	34	1,224
Sand (gas).....	4	1,228
Limestone .....	16	1,244
Slate .....	41	1,285
Red rock.....	15	1,300
Sand (oil, 1,340 feet).....	40	1,340
Slate .....	28	1,368



*Logs—Continued.*

	Thickness Feet	Depth Feet
Sand .....	20	1,388
Slate .....	10	1,398
Sand (little oil, best showing, 1,411 feet) .....	26	1,424
Total depth.....	.....	1,424

*Bport. sec. 32, NW., No. 23.*

Operators—Snowden Bros.

Farm and well—Perkins, No. 28.

Elevation—511 feet.

	Thickness Feet	Depth Feet
Clay .....	20	20
Slate .....	80	100
Sand .....	60	160
Slate .....	109	269
Shell .....	6	275
Slate .....	75	350
Slate and shells.....	50	400
Slate .....	100	500
Limestone .....	8	508
Slate .....	72	580
Limestone .....	4	584
Slate .....	132	716
Limestone shells.....	4	720
Slate .....	45	765
Limestone shells.....	6	771
Slate .....	23	794
Sand .....	26	820
Slate .....	17	837
Limestone .....	10	847
Slate .....	8	855
Slate and shells.....	30	885
Sand and limestone (oil, 890 feet) .....	5	890
Sand .....	25	915
Slate .....	60	975
Limestone .....	17	992
Sand .....	21	1,013
Shells .....	11	1,024
Sand .....	66	1,090
Slate .....	6	1,096
Limestone .....	29	1,125
Slate .....	15	1,140
Limestone .....	16	1,156
Slate .....	9	1,163
Limestone .....	14	1,177
Slate .....	33	1,210
Red rock.....	6	1,216
Slate .....	20	1,236
Shells .....	24	1,260
Limestone .....	4	1,264
Slate .....	19	1,283
Limestone (little gas, 1,290 feet) .....	32	1,315
Slate .....	6	1,321
Gas sand (gas, 1,322 feet) .....	9	1,330
Slate .....	15	1,345
Red rock.....	6	1,351
Slate .....	15	1,364
Oil sand (oil, 1,370 to 1,384 feet) .....	22	1,386
Slate .....	12	1,400
Sand .....	12	1,412
Slate .....	50	1,462
Oil sand (oil, 1,468 to 1,482 feet) .....	28	1,490
Slate .....	7	1,497
Limestone .....	8	1,505
Total depth.....	.....	1,505

*Bport. sec. 32, NW., No. 19.*

Operators—Snowden Bros.

Farm and well—Perkins, No. 22.

Elevation—488 feet.

Logs—Continued.

	Thickness Feet	Depth Feet
Clay .....	23	23
Slate .....	52	75
Sand (water, 135 to 150 feet).....	75	150
Slate .....	25	175
Sand .....	70	245
Slate .....	4	249
Limestone shells.....	6	255
Slate, red.....	5	260
Slate .....	125	385
Sand .....	10	395
Slate, dark.....	30	425
Slate, light.....	40	465
Slate, dark.....	20	485
Sand shells.....	5	490
Slate, dark.....	180	670
Slate, light.....	23	693
Limestone shells.....	12	705
Slate .....	25	730
Slate and shells, light.....	55	785
Slate and shells, dark.....	43	828
Sand .....	22	850
Slate .....	20	870
Sand .....	30	900
Slate .....	45	945
Sandy limestone.....	40	985
Sand .....	28	1,013
Total depth.....	.....	1,013

Bport. sec. 32, SW., No. 5.

Operators—Snowden Bros.  
Farm and well—Perkins, No. 17.  
Elevation—479 feet.

	Thickness Feet	Depth Feet
Clay .....	20	20
Slate .....	60	80
Sand .....	70	150
Slate .....	15	165
Sand .....	89	254
Limestone .....	6	260
Slate .....	5	265
Red rock.....	5	270
Slate .....	175	445
Sandy limestone.....	10	455
Slate .....	20	475
Limestone .....	5	480
Slate .....	10	490
Limestone .....	3	493
Coal .....	3	496
Limestone .....	7	503
Slate .....	87	590
Sandy shells.....	5	595
Slate .....	95	690
Sandy shells.....	10	700
Sand .....	10	710
Slate .....	32	742
Sand .....	6	748
Slate and shells.....	37	785
Sand .....	15	800
Slate and shells.....	45	845
Limestone .....	5	850
Sand .....	7	857
Slate .....	18	875
Sand .....	15	890
Slate .....	14	904
Sand and slate.....	6	910
Slate .....	10	920
Sand (oil, 925 to 935 feet).....	42	962
Slate .....	13	975
Limestone, gritty.....	45	1,020
Sand (oil, 1,045 feet; water, 1,050 feet).....	85	1,105
Slate .....	3	1,108
Sand .....	28	1,136

Logs—Concluded.

	Thickness Feet	Depth Feet
Slate .....	2	1,138
Sand .....	22	1,160
Slate .....	24	1,184
Limestone .....	3	1,187
Red slate.....	6	1,193
Slate and shells.....	27	1,220
Limestone .....	25	1,245
Slate and shells.....	13	1,258
Red slate.....	4	1,262
Sand (gas, 1,267 feet).....	28	1,290
Limestone .....	15	1,305
Red slate.....	25	1,330
Slate .....	20	1,350
Sand (oil, 1,351 feet).....	45	1,395
Slate .....	21	1,416
Sand and shells.....	14	1,430
Slate and shells.....	20	1,450
Sand (oil, 1,461 feet).....	10	1,460
Slate .....	15	1,475
Sand (gas, 1,490 feet).....	25	1,500
Slate and shells.....	40	1,540
Limestone and slate.....	30	1,570
Sand (gas, 1,580 feet).....	25	1,595
Limestone, gritty.....	45	1,640
Limestone and sand (show of oil, 1,695 feet).....	55	1,690
Sandy limestone.....	24	1,714
Total depth.....		1,714

Bport. sec. 32, SW., No. 13.

Operators—Snowden Bros.  
Farm and well—Perkins, No. 16.  
Elevation—494 feet.

	Thickness Feet	Depth Feet
Sand (water).....	130	125 to 255
Limestone shell, very hard.....	10	270 to 280
Red rock.....	7	285 to 292
Coal .....	6	430 to 436
Coal .....	5	500 to 505
Limestone shell.....	7	710 to 717
Sand .....	5	720 to 725
Sand (show of oil, 805 feet).....	26	800 to 826
Oil sand (water, 880 feet).....	75	840 to 915
Sand, hole full of water.....	96	1,060 to 1,150
Slate and shells.....	9	1,156 to 1,165
Limestone .....	15	1,180
Slate .....	30	1,210
Red slate.....	5	1,215
Slate .....	20	1,235
Limestone .....	8	1,243
Slate .....	4	1,247
Limestone .....	11	1,258
Slate .....	14	1,272
Red slate.....	6	1,278
Slate .....	2	1,280
Sand (gas, 1,285 feet).....	20	1,300
Slate .....	5	1,305
Limestone .....	6	1,311
Slate .....	33	1,344
Red slate.....	6	1,350
Slate .....	6	1,356
Sand (oil, 1,378 and 1,398 feet).....	54	1,410
Slate .....	33	1,443
Sand (pay, 1,445 to 1,450 feet).....	17	1,460
Slate .....	19	1,479
Sand .....	14	1,493
Slate .....	10	1,503
Limestone .....	5	1,508
Total depth.....		1,548
Production, 100 bbls.		

CROSS-SECTION B-B.

The B-B crsos-section, Pl. XIII, shows the structure of the northern end of the field. It crosses the field diagonally between Pet. sec. 15, NE., No. 1, and Pet. sec. 30, SW., No. 1. The sands above the "Gas" sand were not correlated because of their irregularity. The lower sands show the major arch of this region to be about 250 feet high and three miles wide. The section is made up of the following records.

LOGS.

The records of the following wells are found in the tables of well data:

List of Wells in Lawrence County Furnishing Data for Cross-Section B-B.

Township.	Section.	Quarter-section.	Well number.
Petty.....	2.....	SE.	2
	2.....	SE.	7
	2.....	SE.	5
	2.....	NE.	6
	36.....	SW.	13
	36.....	SW.	1
	36.....	NE.	7
	36.....	NE.	6
	30.....	SW.	1

Pet. sec. 15, NE., No. 1.

Presented in the stratigraphic discussion, page 80.

Pet. sec. 2, SW., No. 6.

Operators—Snowden Bros.  
Farm and well—Armitage, No. 2.  
Elevation—445 feet.

	Thickness Feet	Depth Feet
Soil, yellow.....	33	33
Slate, dark.....	162	195
Sand, light.....	15	210
Slate, dark.....	35	245
Limestone, light.....	8	253
Slate, white, soft.....	25	278
Limestone, white.....	15	293
Slate, white, soft.....	17	310
Sand, light (7 ballers of water per hour, 345 feet).....	35	345
Slate and limestone shells, light, hard.....	11	356
Red rock.....	9	365
Slate, white.....	20	385
Sand, white.....	20	405
Slate, black, soft.....	75	480
Sand, light.....	15	495
Slate, light.....	25	520
Limestone, light.....	15	535
Slate and shells.....	30	565
Limestone, light, hard.....	12	577
Slate, black, soft.....	13	590
Limestone, white, medium.....	15	605
Slate, dark, soft.....	55	660
Sand, light.....	40	700
Slate, light, soft.....	100	800
Limestone, light, hard.....	7	807
Slate, dark, soft.....	12	819

Logs—Continued.

	Thickness Feet	Depth Feet
Red rock.....	10	829
Limestone, white, hard.....	15	844
Sand, white.....	25	869
Slate, dark, soft.....	40	909
Limestone, white, hard.....	15	924
Sand, white.....	12	936
Slate, dark, soft.....	15	951
Sand, white.....	13	964
Sandy limestone, white.....	30	994
Slate and shells.....	146	1,140
Sand (hole full of water, 1,140 feet).....	30	1,170
Slate, black.....	5	1,175
Limestone shells and sand.....	20	1,195
Slate, dark, soft.....	45	1,240
Limestone shells, light.....	3	1,243
Slate and shells, light.....	42	1,285
Sandy limestone.....	15	1,300
Slate and shells.....	15	1,315
Limestone, light, hard.....	5	1,320
Slate and shells.....	115	1,435
Limestone, light, hard.....	5	1,440
Slate.....	18	1,458
Limestone, light, hard.....	22	1,480
Slate, white, soft.....	15	1,495
Red rock.....	10	1,505
Sand, light (show of oil, 1,505 feet).....	6	1,511
Slate and shells.....	24	1,535
Sand (oil, 1,555 feet).....	30	1,565
Slate.....	12	1,577
Limestone and sand (oil, 1,578 to 1,583 feet).....	20	1,597
Slate.....	13	1,610
Total depth.....	.....	1,610

Pet. sec. 2, SE., No. 10.

Presented in the stratigraphic discussion, page 81.

Pet. sec. 1, NW., No. 3.

Presented in the discussion of the A-A cross-section, page 117.

Pet. sec. 36, SW., No. 10.

Presented in the discussion of the A-A cross-section, page 117.

Pet. sec. 36, NE., No. 10.

Operators—Snowden Bros.  
Farm and well—Nuttall, No. 5.  
Elevation—435 feet.

	Thickness Feet	Depth Feet
Gravel, yellow, soft.....	180	180
Slate, black, soft.....	80	260
Limestone, white, hard (water).....	40	300
Sand, white, hard (12 bailers water, 305 feet).....	5	305
Red rock.....	5	310
Slate, white, soft.....	60	370
Limestone, white, hard.....	85	455
Sand, white, soft (water).....	45	500
Slate, white, soft.....	40	540
Slate, black, soft.....	25	565
Slate and limestone shells.....	70	635
Slate, black, soft.....	90	720
Sand, white, soft (water).....	25	750
Slate, white.....	35	785
Sand (hole full of water, 1,000 feet).....	215	1,000
Limestone, white, hard.....	95	1,095
Sand, white, hard.....	65	1,160



Red  
Lime  
Sand  
Slat  
Lime  
Sand  
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Logs—Concluded.

	Thickness Feet	Depth Feet
Sand, slate, and shells, dark.....	50	1,210
Slate, white, hard.....	50	1,260
Sand, white, hard.....	35	1,295
Limestone, white, hard.....	15	1,310
Red rock.....	5	1,315
Limestone, white, hard.....	100	1,415
Slate, black, soft.....	19	1,435
Oil sand, gray.....	9	1,444
Slate, black.....	11	1,455
Sand, white (4 ballers of water, 1,465 feet).....	10	1,465
Slate.....	25	1,490
Limestone, white, soft.....	60	1,550
Limestone, yellow, hard (oil, 1,564 feet).....	15	1,565
Sandy limestone, white, soft.....	4	1,569
Sand, green oil, hard (first showing, 1,612 feet).....	53	1,622
Slate, black, soft.....	15	1,637
Total depth.....		1,637

CROSS-SECTION C-C.

The C-C cross-section, Pl. XIV, is chosen along a line crossing the crest of the large dome in section 30, Petty township. This cross-section presents the extreme structure of the Lawrence county field. It shows the arch to be about 400 feet high and three miles wide. Correlation lines of five sands are drawn over the dome and reveal some irregularities of interval, particularly between the Kirkwood and Tracey sands and the Buchanan and "Gas" sands.

The section is made up of the following records:

LOGS.

The records of the following wells are in the tables of well data:

List of Wells Affording Data for Cross-Section C-C.

Township.	Section.	Quarter-section.	Well number.
Bridgeport.....	36.....	NE.	7
	31.....	NW.	5
Petty.....	31.....	NW.	4
	30.....	SW.	13
	30.....	SW.	12
	30.....	SE.	18
	30.....	SE.	15
	30.....	SE.	64
	30.....	SE.	63
	30.....	SE.	52
	30.....	SE.	53
	29.....	NW.	30, 31
	29.....	NW.	29
	29.....	NW.	2
	20.....	SE.	3

The remaining detailed logs of the section are presented as follows:

Bport. sec. 36, SE., No. 8.

Operators—Bridgeport Oil Company.  
Farm and well—Stoltz, No. 13.  
Elevation—523 feet.

*Logs—Continued.*

	Thickness Feet	Depth Feet
Slate and shells.....	65	65
Limestone .....	20	85
Slate .....	25	110
Limestone .....	10	120
Sand .....	15	135
Slate .....	105	240
Sand (water).....	40	280
Sand .....	20	300
Slate .....	40	340
Coal .....	5	345
Limestone .....	35	380
Big limestone shell.....	40	420
Red rock.....	8	428
Slate .....	13	441
Limestone (?) (probably slate and shells).....	139	580
Slate .....	20	600
Limestone (?) (probably slate and shells).....	170	770
Sand (salt water).....	25	795
Black slate.....	55	850
Sand .....	40	890
Sand (water).....	45	935
Slate .....	12	947
Coal .....	2	949
Slate .....	10	959
Limestone .....	5	964
Slate .....	3	967
Sand .....	8	975
Slate .....	45	1,020
Sand .....	15	1,035
Slate .....	20	1,055
Limestone .....	3	1,058
Slate .....	40	1,098
Limestone .....	2	1,100
Slate .....	25	1,125
Limestone .....	21	1,146
Salt sand.....	99	1,245
Slate .....	15	1,260
Sand (salt water).....	60	1,320
Slate .....	27	1,347
Limestone .....	37	1,370
Slate .....	20	1,390
Sand .....	10	1,400
Slate .....	15	1,415
Limestone .....	20	1,435
Slate .....	10	1,445
Sand (water).....	20	1,465
Slate .....	8	1,473
Limestone .....	5	1,478
Slate .....	17	1,495
Limestone .....	10	1,505
Slate .....	17	1,522
Red rock.....	13	1,535
Slate .....	5	1,540
Limestone .....	35	1,575
Slate .....	20	1,595
Sand (5 ballers of water per hour).....	10	1,605
Limestone .....	25	1,630
Slate .....	43	1,673
Limestone .....	2	1,675
Slate .....	4	1,679
Sand (oil, 1,689 feet).....	21	1,700
Sand, broken.....	10	1,710
Slate .....	5	1,715
Sand, broken.....	12	1,727
Slate .....	6	1,733
Total depth.....		1,733

*Bport. sec. 36. SE., No. 2.*

Operators—Snowden Bros.

Farm and well—E. Fyffe, No. 9.

Elevation—506 feet.

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Logs—Continued.

	Thickness Feet	Depth Feet
Soil .....	14	14
Slate .....	90	104
Limestone shell.....	10	114
Slate .....	111	225
Sand (water, 240 to 300 feet).....	85	310
Slate .....	55	365
Sand .....	40	405
Slate .....	10	415
Limestone, hard.....	12	427
Red slate.....	10	437
Sand, white, hard.....	15	452
Limestone, white, hard.....	7	459
Slate, dark, soft.....	192	651
Sand, white, hard.....	11	662
Slate .....	176	838
Limestone, white, hard.....	2	840
Slate .....	18	858
Limestone .....	7	865
Slate .....	25	890
Sand (water, 905 feet).....	50	940
Slate .....	185	1,125
Sand (water, 1,160 feet).....	135	1,260
Slate .....	25	1,285
Sand (water, 1,325 feet).....	40	1,325
Slate .....	65	1,390
Sand (water, 1,435 feet).....	60	1,450
Limestone .....	10	1,460
Slate, dark.....	43	1,503
Red rock, cave.....	7	1,510
Slate, dark, soft.....	5	1,515
Slate, dark, hard.....	17	1,532
Sand, white, hard.....	7	1,539
Slate, white, soft.....	15	1,554
Shale .....	19	1,573
Sand (water, 1,589½ feet).....	16	1,589
Limestone .....	20	1,609
Slate, black.....	20	1,629
Slate, white.....	9	1,638
Red slate.....	2	1,640
Shell, hard.....	2	1,642
Sand, white (oil, 1,651 feet).....	57	1,699
Slate, dark.....	18½	1,717½
Total depth.....		1,717½
Initial production, 150 bbls.		

Bport. sec. 31, NW., No. 14.

Operators—Central Refining Company.  
Farm and well—Perry King, No. 5.  
Elevation—487 feet.

	Thickness Feet	Depth Feet
Clay .....	70	70
Limestone .....	6	76
Slate .....	20	96
Limestone .....	14	110
Slate .....	35	145
Limestone .....	5	150
Sand .....	80	230
Limestone .....	30	260
Sand .....	45	305
Slate .....	10	315
Sand .....	10	325
Red rock.....	6	331
Limestone .....	20	351
Slate .....	174	525
Sand .....	12	537
Slate .....	158	695
Sand .....	30	725
Slate .....	55	780
Limestone .....	5	785
Sand .....	80	865
Slate and shells.....	115	980
Sand (show of oil, 995 feet).....	60	1,040

Logs—Continued.

	Thickness Feet	Depth Feet
Slate .....	12	1,052
Sand .....	83	1,135
Slate .....	10	1,145
Sand .....	145	1,290
Slate .....	15	1,305
Sand .....	35	1,340
Slate .....	10	1,350
Red rock.....	12	1,362
Limestone .....	53	1,415
Red rock.....	6	1,421
Sand .....	15	1,436
Limestone .....	29	1,465
Slate .....	14	1,479
Red rock.....	15	1,494
Sand (oil).....	30	1,524
Total depth.....	.....	1,524

Pet. sec. 30, SE., No. 26.

Operators—Bridgeport Oil Company.  
Farm and well—Willey, No. 11.  
Elevation—507 feet.

	Thickness Feet	Depth Feet
Soil .....	6	6
Quicksand .....	9	15
Slate .....	85	100
Sand .....	25	125
Limestone, hard.....	7	132
Sand .....	18	150
Slate and limestone.....	85	235
Sand .....	5	240
Coal .....	3	243
Slate and limestone.....	12	255
Red rock.....	20	275
Limestone and slate.....	85	360
Sand .....	30	390
Slate and limestone.....	84	474
Coal .....	2	476
Slate and limestone.....	134	610
Sand .....	28	638
Slate and limestone.....	67	705
Salt sand.....	45	750
Slate and limestone.....	45	795
Sand (oil, 820 feet).....	35	830
Limestone .....	10	840
Slate .....	15	855
Limestone .....	103	958
Slate .....	5	963
Sand, broken.....	26	989
Sand (show of oil, 1,000 feet).....	16	1,005
Slate .....	10	1,015
Sand .....	25	1,040
Slate .....	10	1,050
Limestone .....	15	1,065
Sand .....	40	1,105
Limestone .....	10	1,115
Salt sand.....	57	1,172
Limestone .....	6	1,178
Slate .....	21	1,199
Sand .....	9	1,208
Slate .....	7	1,215
Red rock.....	10	1,225
Limestone .....	5	1,230
Slate .....	20	1,250
Limestone .....	15	1,265
Slate .....	2	1,267
Limestone .....	8	1,275
Slate .....	15	1,290
Sand (gas).....	10	1,300
Limestone .....	18	1,318
Slate .....	36	1,354
Sand (oil, 1,358 feet).....	8	1,362
Slate .....	.....	1,362
Total depth.....	.....	1,362

Logs—Continued.

Pet. sec. 29, NW., No. 39.

Operators—Silurian Oil Company.  
Farm and well—J. D. Bowers, No. 7.  
Elevation—443 feet.

	Thickness Feet	Depth Feet
Sand (oil, 920 feet).....	75	910 to 985
Sand (salt water).....	40	1,060 to 1,100
Slate .....	38	1,138
Red rock.....	4	1,142
Slate .....	32	1,174
Limestone .....	12	1,186
Slate .....	39	1,225
Limestone .....	15	1,240
Slate .....	25	1,265
Red rock.....	5	1,275 to 1,280
Slate .....	8	1,288
Sand .....	32	1,320
Slate .....	35	1,355
Limestone .....	15	1,370
Slate .....	50	1,420
Sand (gas, 1,427 feet).....	15	1,425 to 1,440
Total depth.....		1,440
Gas well, 520 pounds rock pressure.		

Pet. sec. 29, NW., No. 8.

Operators—Bridgeport Oil Company.  
Farm and well—Eshelman, No. 16.  
Elevation—438 feet.

	Thickness Feet	Depth Feet
Soil .....	25	25
Sand .....	47	72
Slate .....	53	125
Sand .....	20	145
Slate .....	10	155
Sand .....	10	165
Slate .....	5	170
Limestone .....	5	175
Slate .....	60	235
Limestone .....	10	245
Slate .....	15	260
Sand .....	40	300
Limestone .....	5	305
Slate .....	45	350
Sand .....	15	365
Slate .....	42	407
Coal .....	3	410
Slate .....	90	500
Sand .....	20	520
Slate .....	55	575
Limestone, hard.....	5	580
Slate .....	5	585
Sand, broken.....	81	666
Slate, soft.....	24	690
Limestone .....	10	700
Slate .....	60	760
Limestone .....	15	775
Sandy limestone.....	27	802
Slate, black.....	58	860
Sand (oil).....	10	870
Broken sand.....	52	922
Sand (some oil, 925 feet), white.....	58	980
Slate .....	7	987
Limestone .....	11	998
Slate .....	7	1,005
Limestone, hard.....	10	1,015
Slate .....	10	1,025
Limestone .....	10	1,035



Logs—Concluded.

	Thickness Feet	Depth Feet
Slate .....	15	1,050
Sand (salt water).....	55	1,105
Limestone .....	5	1,110
Slate .....	6	1,116
Sandy limestone.....	13	1,129
Limestone .....	15	1,144
Red rock.....	2	1,146
Slate .....	34	1,180
Limestone .....	18	1,198
Slate .....	12	1,210
Red rock.....	13	1,223
Slate .....	4	1,227
Sand (gas).....	13	1,240
Limestone, hard.....	10	1,250
Slate .....	23	1,273
Red rock.....	12	1,285
Sand (oil pay, 1,298 to 1,330 feet).....	63	1,348
Slate .....	25	1,373
Limestone .....	14	1,387
Slate .....	33	1,420
Limestone .....	6	1,426
Total depth.....		1,426

Pet. sec. 20, SE., No. 7.

Operators—E. N. Gillespie.  
Farm and well—Smith, No. 24.  
Elevation—435 feet.

	Thickness Feet	Depth Feet
Sand (salt water).....	25	725
Slate and shells.....	251	976
Sand .....	5	981
Sand (water).....	94	1,075
Slate .....	95	1,170
Sand, salt.....	86	1,256
Slate and shells.....	41	1,297
Red rock.....	13	1,310
Slate .....	10	1,320
Limestone .....	30	1,350
Slate .....	35	1,385
Shells and slate.....	52	1,437
Sand, broken.....	27	1,465
Sand (oil).....	10	1,475
Slate .....	8	1,483
Sand .....	56	1,539
Limestone .....	5	1,544
Slate .....	17	1,561
Total depth.....		1,561

Initial production, 80 bbls.

CROSS-SECTION D-D.

The D-D cross-section, Pl. XV, is drawn across the southern end of the field. It shows the flattened nature of the LaSalle anticline in this region and the small terrace on the western limb of the fold. The “Gas” sand is not noted in this portion of the field. The remaining producing sands are essentially flat but locally irregular. The section is made up of the following records:

LOGS.

The records of the following wells are in the tables of well data:

Logs—Continued.

List of Wells Affording Data for Cross-Section D-D.

Township.	Section.	Quarter-section.	Well number.
Bridgeport.....	20.....	NE.	2
	Dennison.....	SW.	2
		SW.	3
		NW.	6
		NE.	9
		NE.	10
Lawrence.....	22.....	NW.	12, 13
	15.....	SW.	17
	15.....	SE.	1
	15.....	SE.	9
	15.....	SE.	12
	14.....	NW.	7
	14.....	NW.	3
	14.....	NE.	17
	14.....	NE.	1
	12.....	SW.	8

The remaining detailed logs of the section are presented below and elsewhere in this report:

Bport. sec. 30, NE., No. 2.

Operators—Snowden Bros.  
Farm and well—McOrr, No. 1.  
Elevation—503 feet.

	Thickness Feet	Depth Feet
Soil and slate.....	80	80
Sand, white (water, 80 feet).....	35	125
Slate, white, soft.....	105	230
Sand .....	30	260
Slate .....	10	270
Limestone .....	4	274
Slate .....	156	430
Limestone .....	8	438
Slate, red, soft.....	7	445
Slate, white, soft.....	15	460
Sand .....	15	475
Slate .....	125	600
Coal .....	4	604
Slate .....	71	675
Sand, white, hard.....	5	680
Slate .....	90	770
Limestone .....	15	785
Slate, white, soft.....	83	868
Sand, white, soft (hole full of water, 916 feet).....	48	916
Slate, dark, soft.....	25	941
Limestone, white, hard.....	9	950
Slate .....	20	970
Limestone .....	8	978
Slate .....	19	997
Sand .....	3	1,000
Slate .....	40	1,040
Sand, white, soft (water, 1,045 feet).....	15	1,055
Slate .....	20	1,075
Limestone, white, very hard.....	3	1,078
Slate, dark, soft.....	42	1,120
Sand, white, soft (hole full of water, 1,170 feet).....	210	1,330
Slate, dark.....	53	1,383
Sand, light, hard.....	9	1,392
Slate, dark, soft.....	23	1,415
Sand, white (water, 1,420 feet).....	35	1,450
Slate, dark, soft.....	70	1,520
Sand (hole full of water, 1,522 feet).....	25	1,545
Slate .....	49	1,594
Sand .....	59	1,653
Limestone, white, hard.....	15	1,668

Logs—Continued.

	Thickness Feet	Depth Feet
Slate, dark, loose.....	19	1,687
Sand, dark, soft (8 bailers of water, 1,708 feet).....	21	1,708
Slate .....	5	1,713
Limestone, white, hard.....	2	1,715
Red rock.....	10	1,725
Slate, light.....	13	1,738
Limestone .....	2	1,740
Slate, dark, very soft.....	14	1,754
Limestone .....	10	1,764
Slate, dark, very soft.....	26	1,790
Sand, light, hard.....	10	1,800
Slate .....	8	1,808
Limestone .....	20	1,828
Slate .....	37	1,865
Sand (4 bailers of water, 1,880 feet).....	71	1,936
Slate .....	22	1,958
Sand (pay, 1,962 to 1,972 feet).....	14	1,972
Total depth.....	.....	1,972

Bport. sec. 29, NW., No. 2.

Operators—Snowden Bros.  
Farm and well—H. K. Seed, No. 2.  
Elevation—490 feet.

	Thickness Feet	Depth Feet
Soil .....	18	18
Sand, slate and shells.....	332	350
Sand, white, soft.....	50	400
Slate and shells.....	300	700
Slate, white.....	50	750
Slate, dark.....	81	831
Sand, white (salt water, 851 feet).....	129	960
Slate, sand, and shells (salt water, 1,165 feet).....	205	1,165
Sand, white.....	105	1,270
Slate, dark.....	25	1,295
Sand .....	25	1,320
Limestone, white.....	25	1,345
Slate, dark.....	80	1,425
Sand, white.....	187	1,612
Slate .....	8	1,620
Sand, white (salt water, 1,650 feet).....	30	1,650
Red slate.....	25	1,675
Limestone shells.....	55	1,730
Sand .....	20	1,750
Slate and shells.....	35	1,785
Red rock.....	6	1,791
Slate .....	11	1,802
Sand, white.....	26	1,828
Slate .....	17	1,845
Sand, white (salt water, 1,860 feet).....	20	1,865
Slate .....	14	1,879
Shells, hard.....	2	1,881
Sand, brown.....	17	1,898
Total depth.....	.....	1,900
Initial production, 125 bbls.		

Bport. sec. 29, NW., No. 1.

Operators—Snowden Bros.  
Farm and well—H. K. Seed, No. 1.  
Elevation—476 feet.

	Thickness Feet	Depth Feet
Red rock.....	5	415
Sand, dry.....	14	610
Slate .....	150	760
Sand .....	15	775



Slate,  
Sand,  
Slate  
Limes  
Red 1  
Slate,  
Limes  
Slate,  
Limes  
Slate,  
Sand,  
Slate  
Limes  
Slate  
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Slate  
Sand

T

Op.  
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Soil  
Sand,  
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Sand  
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Slate  
Sand,  
Red 1  
Limes  
Sand  
Slate  
Red 1  
Slate  
Sand,  
Slate  
Sand,  
Slate  
Shells  
Sand,

T  
Init

Op.  
Fa  
Ele

Red  
Sand,  
Slate  
Sand

Logs—Continued.

	Thickness Feet	Depth Feet
Slate .....	55	830
Sand (salt water, 840 and 880 feet).....	40	870
Slate .....	5	875 to 880
Sand (water).....	40	920
Slate .....	10	930
Sand (water).....	20	950
Slate .....	95	1,045
Sand (water).....	230	1,275
Limestone .....	25	1,300
Slate .....	150	1,450
Sand (water, 1,460 feet).....	40	1,490
Slate .....	20	1,510
Limestone .....	20	1,530
Sand .....	5	1,532 to 1,537
Slate .....	163	1,700
Red rock.....	5	1,705
Slate .....	95	1,800
Red rock.....	15	1,815
Sand (water, 1,830 feet).....	15	1,830
Slate .....	28	1,858
Limestone .....	2	1,860
Slate .....	2	1,862
Oil sand.....	12	1,874
Slate .....	11	1,885
Total depth.....		1,885
Initial production, 40 bbls.		

Law sec. 11, SE., No. 6.

Presented in the stratigraphic discussion, page 67.

Law. sec. 12, SW., No. 7.

Presented in the stratigraphic discussion, page 68.

Law. sec. 12, SW., No. 4.

Operators—Bridgeport Oil Company.  
Farm and well—Henry, No. 1.  
Elevation—440 feet.

	Thickness Feet	Depth Feet
Soil, etc.....	.....	90
Sand (fresh water).....	17	107
Slate .....	38	145
Limestone .....	10	155
Slate .....	10	165
Limestone shells.....	100	265
Red rock.....	13	278
Limestone, slate, and shells.....	72	350
Slate, pencil cave.....	70	420
Limestone and slate.....	190	610
Sand (hole full of salt water, 700 feet).....	90	700
Slate and shells.....	205	905
Sand (salt water, 910 feet).....	15	920
Slate .....	60	980
Sand (salt water, 1,000 and 1.030 feet).....	85	1,065
Slate, black.....	115	1,180
Slate and shells.....	110	1,290
Limestone .....	10	1,300
Sand (water, 1,300 feet).....	16	1,316
Slate .....	6	1,322
Sand .....	8	1,330
Limestone .....	55	1,385
Slate and shells.....	44	1,429
Limestone .....	30	1,459
Slate .....	31	1,490
Red rock, cave.....	10	1,500
Slate .....	5	1,505
Lime .....	16	1,521
Slate .....	23	1,544

Logs—Concluded.

	Thickness Feet	Depth Feet
Red rock.....	5	1,549
Sand (oil, 1,556 and 1,568 feet).....	31	1,580
Slate .....	10	1,590
Sand (show of oil).....	5	1,595
Slate .....	5	1,600
Sand (oil pay).....	10	1,610
Limestone shell.....	90	1,700
Red rock, cave.....	10	1,710
Limestone.....	77	1,787
Sand .....	4	1,791
Limestone .....	91	1,882
McClosky sand.....	6	1,888
Total depth.....	.....	1,889

Low. sec. 12, SE., No. 2.

Operators—Bridgeport Oil Company.  
Farm and well—Tracey Heirs, No. 1.  
Elevation—455 feet.

	Thickness Feet	Depth Feet
Sand (water at 12 feet.)		
Sand and gravel.....	85	85
Slate .....	15	100
Sand .....	10	110
Limestone .....	10	120
Sand .....	30	150
Limestone .....	5	155
Slate .....	35	230
Limestone .....	12	242
Slate .....	48	290
Limestone .....	10	300
Slate .....	15	315
Sand .....	25	340
Limestone .....	12	352
Slate .....	48	400
Limestone .....	10	410
Slate .....	50	460
Limestone .....	15	475
Slate .....	103	578
Limestone .....	5	583
Slate .....	17	600
Sand (water).....	30	630
Slate .....	50	680
Limestone .....	30	710
Slate .....	13	723
Sand .....	12	735
Slate .....	80	915
Limestone .....	5	920
Slate .....	27	947
Sand .....	63	1,010
Slate .....	31	1,041
Sand (water).....	29	1,070
Slate .....	15	1,085
Sand .....	40	1,125
Slate .....	68	1,193
Limestone .....	15	1,208
Slate .....	57	1,265
Sand (show of oil, 1,285 feet).....	47	1,312
Slate .....	48	1,360
Sand .....	45	1,405
Slate .....	20	1,425
Limestone .....	25	1,450
Slate .....	30	1,480
Red rock.....	10	1,490
Limestone .....	10	1,500
Sand .....	10	1,510
Slate .....	55	1,565
Sand (water, 1,570 feet).....	20	1,585
Slate .....	5	1,590
Sand (show of oil, 1,595 feet. Water, 1,600 feet).....	25	1,615
Slate .....	112	1,727
Limestone .....	45	1,772
Sand .....	14	1,786
Limestone .....	297	2,083
Well plugged and abandoned.		



RELATIONS OF STRUCTURE TO OIL AND GAS.

OIL.

The oil sands of Lawrence county have proven the richest in Illinois. They show remarkable stability in their yield and have promise of long life. The shallower sands have declined rapidly, but the Kirkwood, Tracey and McClosky sands are still prolific. Of the 2,810 wells mapped in this county, but 156, or 5½ per cent were dry. There are 890 wells mapped in Petty township, 860 in Bridgeport, 349 in Lawrence, and 711 in Dennison. The range of initial production is between one and 2,400 barrels per day. The Kirkwood sand has shown the best general production while the McClosky sand yielded the greatest number of gushers. The Bridgeport sand is the second best general producing sand. It has declined rapidly, however, and is giving way to the development of steadier sands beneath. There are 1,835 of the 2,654 producing wells, or about 70 per cent, that furnish information of the initial yield. This is sufficient to indicate the nature of distribution of oil in this field with respect to structural conditions. The following table shows the number of wells that furnished data of initial productions for each sand. They are listed by townships, sands, and extent of yield. The gas and dry wells are also given:

Table Showing Initial Productions of Various Sands in the Lawrence County Field.

Lawrence county.		Number of wells classified according to their initial production.							
Township.	Producing sand.	0-10 bbls.	10-50 bbls.	50-100 bbls.	100-200 bbls.	200-500 bbls.	Over 500 bbls.	Gas.	Dry.
Petty.....	Bridgeport.....	4	27	19	21	15	.....	1	
	Buchanan.....	.....	.....	.....	.....	.....	.....	.....	
	"Gas".....	.....	13	6	3	.....	.....	3	
	Kirkwood.....	4	71	87	63	10	4	8	
	Tracey.....	2	20	15	7	1	.....	22	
	McClosky.....	8	52	35	23	4	6	5	44
Bridgeport...	Bridgeport.....	6	48	100	47	3	3	.....	
	Buchanan.....	.....	4	8	30	38	8	.....	
	"Gas".....	.....	7	2	3	1	.....	3	
	Kirkwood.....	4	60	74	47	19	4	.....	
	Tracey.....	.....	1	1	1	.....	.....	1	
	McClosky.....	.....	5	13	3	6	4	8	22
Lawrence....	Bridgeport.....	.....	1	1	4	.....	.....	.....	
	Buchanan.....	.....	7	11	51	22	1	.....	
	"Gas".....	.....	.....	.....	.....	.....	.....	.....	
	Kirkwood.....	3	44	27	21	6	.....	.....	
	Tracey.....	.....	8	1	.....	.....	.....	.....	
	McClosky.....	1	2	4	4	5	4	.....	25
Dennison....	Shallow.....	.....	4	.....	.....	.....	.....	.....	
	Bridgeport.....	5	50	51	54	9	.....	9	
	Buchanan.....	1	1	3	22	10	.....	.....	
	"Gas".....	.....	.....	.....	.....	.....	.....	.....	
	Kirkwood.....	12	65	76	38	11	.....	1	
	Tracey.....	3	5	4	2	1	.....	1	
Total for field.	McClosky.....	.....	4	5	7	6	16	.....	65
	Shallow.....	.....	4	.....	.....	.....	.....	.....	
	Bridgeport.....	15	126	171	126	27	3	10	
	Buchanan.....	1	12	22	103	70	9	.....	
	"Gas".....	.....	20	8	6	1	.....	6	
	Kirkwood.....	3	240	264	169	46	8	9	
	Tracey.....	5	34	21	10	2	.....	24	
	McClosky.....	9	63	57	37	21	30	13	156

PETTY TOWNSHIP.

The oil in sections 25, 26, 35 and 36, at the extreme northern end of the county, comes from the McClosky and Tracey sands. The initial yield per well does not exceed 200 barrels. The oil in both sands is found under a small dome on the top of the fold, which is separated from the elongated dome farther south by a narrow barren depression across the field. The McClosky sand is highly productive along a narrow strip north and south through the center of the field, especially in sections 18 and 30. The largest initial productions of Lawrence county were found in this sand in section 18. The oil is crowded into a small dome, similar in height, extent, and altitude to the arch in the extreme northern end of the field. The same sand is productive at a like altitude on the western flank of the dome-like structure in section 30. The productive strip is very narrow through this section but becomes broader in sections 31 and 6, Bridgeport township.

The Kirkwood sand shows the greatest number of producing wells in the remaining sections of the field, especially along the eastern dip of the anticline in sections 20 and 29. The wells in this region reported excellent initial productions. The Kirkwood sand is also highly productive in section 30, between 30 and 80 feet lower than the crest on the west side of the dome.

The "Gas" sand primarily produces gas but is productive of oil in the following wells:

*List of Wells Producing Oil From the 'Gas' Sand; Lawrence County.*

Township.	Section.	Quarter-section.	Number of well.	Initial production in bbls.
Petty.....	1.....	NE.	9	20
	7.....	NW.	9	40
	7.....	SW.	1	45
	7.....	SW.	4	35
	7.....	SW.	17	15
	12.....	NE.	2	65
	12.....	SW.	9	75
	12.....	SE.	6	135
	12.....	SE.	7	110
	13.....	SE.	2	75
	17.....	SW.	5	35
	17.....	SW.	6	25
	20.....	NW.	1	25
	24.....	NE.	2	40
	24.....	SE.	7	20
Bridgeport.....	5.....	NW.	9	170
	6.....	NE.	19	70
	6.....	NE.	22	30
	6.....	NE.	23	45
	8.....	NE.	9	60
	8.....	NW.	26	50
	8.....	NW.	27	30
	31.....	NE.	55	100
	31.....	NE.	56	100
	31.....	NE.	59	250
	31.....	SE.	4	50
	32.....	NE.	5	105
	32.....	NE.	18	20
	32.....	SW.	6	25

The Buchanan sand appears unproductive in Petty township. It is not correlated in this region because of possible confusion with the Bridgeport lenses. In fact, it may be possible that some of the lower

productive lenses of the Bridgeport sand are mistaken for the Buchanan.

The Bridgeport sand is especially productive in sections 18, 19, 20, 29 and 30. The initial yields are between 30 and 300 barrels.

#### BRIDGEPORT TOWNSHIP.

The Bridgeport, Buchanan, and Kirkwood sands are the most productive in Bridgeport township. The Bridgeport and Kirkwood sands have the largest number of average size wells, while the Buchanan sand has the larger number of gushers.

The Bridgeport sand is especially productive in sections 32, 5 and 8, which lie structurally along the southern slope of the double plunging anticline. The average yield in these sections is between 50 and 150 barrels.

The Buchanan sand has its type area in section 17. The wells are very rich in their initial yield, varying between 100 and over 500 barrels. There are a number of gushers recorded from this locality. The oil is crowded into a small dome on the crest of the anticline; the structure is discussed on page 107.

The Kirkwood sand yields the best wells in sections 6, 31 and 32, which lie along the western flank of the arch and the south-western slope of the largest dome.

The McClosky sand is productive in sections 6 and 31. This is an extension of the narrow productive area through Petty township. Several gushers are reported from section 31.

#### LAWRENCE TOWNSHIP.

The Kirkwood and Buchanan sands are the most productive in Lawrence township. This locality is the type area for the Kirkwood and a portion of the Buchanan sands.

The Buchanan sand is especially productive in sections 15 and 16. The average yield is 100 to 200 barrels. Several large wells are reported from this area. The oil is crowded into a dome similar in height and altitude to the one in section 17, Bridgeport township.

The type locality for the Kirkwood sand lies in sections 13 and 14 and extends southward into Dennison township. The wells are not highly productive. The oil lies in an extensive flat in the sand which spreads southward through the remainder of the field. The McClosky sand shows a number of excellent wells in section 14.

#### DENNISON TOWNSHIP.

The Bridgeport, Kirkwood and McClosky are the prominent producing sands of Dennison township. The Kirkwood sand, as in Bridgeport and Petty townships, is the most widely productive. The Bridgeport sand closely follows the Kirkwood sand in yield but is spotted in its distribution. The McClosky formation has furnished the best producing wells.

The Bridgeport sand is especially productive in sections 2, 26, 34 and 35. This area lies along the southwestern edge of the field. The wells average 50 to 150 barrels initial yield.

The Buchanan sand is notably productive only in section 21, which is an extension of the small dome lying in sections 15 and 16, Lawrence township. The wells are exceptionally large in their initial yield.

The Kirkwood sand shows many wells in sections 22, 23, 25, 26, 35 and 36. The initial yield averages 100 barrels. The oil lies over a broad flat in the sand that covers most of Dennison township.

The Tracey sand shows a light production in sections 25 and 26.

The McClosky sand has its type area and best production in section 25. There are many gushers from the McClosky sand in this section, the highest reporting 1,860 barrels for the first day. The productive areas of this sand lie at an altitude of about 160 feet above the datum plane.

GAS.

There are about 70 gas wells in Lawrence county. Gas is reported incidentally in over half of the records and is widely distributed in all the sands. The Kirkwood, Tracey and McClosky sands have yielded the most gas, particularly in Petty township where the field is governed by an elongated dome. The following table shows the locations and all available production data of the gas wells in Lawrence county:

Locations of Gas Wells in Lawrence County, and Sources of Gas.

Township.	Section.	Quarter-section.	Well number.	Name of sand.	Yield in cu. ft. per day.	Remarks.
petty.....	1.....	NW.	6	Tracey.....		
	1.....	SW.	3			
	2.....	NE.	2	Kirkwood.....	4,000,000	Second lens.....
	2.....	NE.	4			
	2.....	NE.	6	McClosky.....	2,500,000	
	2.....	NE.	7	Kirkwood.....		
	2.....	NW.	1	do.....		
	2.....	SE.	2	do.....	7,000,000	600 pounds pressure
	2.....	SE.	5	do.....		Second lens.....
	7.....	NW.	10	Tracey.....		
	7.....	SW.	9	do.....		
	12.....	NE.	4	Kirkwood.....		
	12.....	NE.	5	Tracey.....		
	12.....	NW.	1	do.....		
	12.....	NW.	2	do.....		
	12.....	NW.	7	do.....		
	12.....	SE.	1	do.....		
	12.....	SE.	9	do.....		
	13.....	NE.	4	Kirkwood.....		
	19.....	NW.	2	Tracey.....	3,000,000	
	19.....	NW.	6	do.....	7,500,000	650 pounds pressure
	19.....	SE.	6	do.....		400 pounds pressure
	19.....	SE.	29	"Gas".....		
	20.....	SW.	29	Bridgeport.....		
	24.....	NW.	3	Kirkwood.....		Second lens.....
	25.....	NE.	7	Tracey.....		T. 5 N., R. 13 W...
	25.....	SW.	4	do.....		do.....
	25.....	SW.	5	do.....		do.....
	29.....	NW.	39	do.....		520 pounds pressure
	29.....	SE.	1	"Gas".....		
	30.....	NE.	24	McClosky.....		
	30.....	SW.	6	Kirkwood.....		
	30.....	SW.	9	Tracey.....		
	30.....	SW.	13	"Gas".....		
	30.....	SE.	31	do.....		
	30.....	SE.	59	McClosky.....	6,000,000	
	30.....	SE.	69	do.....	2,000,000	
	36.....	NW.	9	do.....		T. 5 N., R. 13 W...
	36.....	NW.	12	Kirkwood.....		do.....

*Locations of Gas Wells in Lawrence County—Concluded.*

				1.	Yield in cu. ft. per day.	Remarks.
Bridgeport.....	5.....	NW.	29	Buchanan.....	1,000,000	
	31.....	NE.	7	McClosky.....	1,000,000	
	31.....	NE.	28	do.....		
	31.....	NE.	48	do.....		
	31.....	NE.	50	do.....		
	31.....	SE.	6	"Gas".....		
	31.....	SE.	11	McClosky.....		
	31.....	SE.	14	"Gas".....		
	32.....	SW.	6	do.....	1,000,000	
	32.....	SW.	10	McClosky.....		
	32.....	SW.	24	Kirkwood.....		
Dennison.....	1.....	SW.	2	Tracey.....	4,500,000	
	1.....	SW.	6	Kirkwood.....	3,000,000	Second lens
	27.....	SE.	8	Bridgeport.....		
	27.....	SE.	4	do.....		
	34.....	NE.	2	do.....		
	34.....	NE.	8	do.....		
	34.....	NE.	6	do.....		
	35.....	NE.	4	do.....	2,000,000	
	35.....	NW.	7	do.....		
	35.....	NW.	8	do.....		
	35.....	SE.	1	Shallow.....	2,500,000	

## PETTY TOWNSHIP.

The greatest number of gas wells of the Lawrence county field lie in Petty township. They are scattered along the flanks of the anticline. The "Gas" sand yields gas in small quantities over Petty township and abundantly in section 30. The gas does not occur at the apex of the large dome centering in this section but lies about 60 feet below on its western flank. The Kirkwood sand is especially productive of gas in sections 1 and 2 in the northern end of the field. The gas seems to be arrested along the steep western flank of the anticline. The Tracey sand shows the greatest productions of gas in this township, and, indeed, over the entire area. The best yield is in the northern portion of the township and through the middle of the broad fold. Several wells also yield gas about 120 feet below the apex of the dome in section 30. The McClosky sand shows an excellent yield of gas on the crest of the same dome.

## BRIDGEPORT TOWNSHIP.

The "Gas" and McClosky sands yield the best pressures of gas in the northern end of the township. The McClosky sand shows several good wells in section 31, about 70 feet lower than the crest of the dome. The two smaller domes in sections 31 and 32 contain gas. The "Gas" sand yields abundant gas in sections 6 and 31, but it lies between 100 and 140 feet below the crest of the dome. The Buchanan sand usually possesses little or no gas, but it reports it in several wells in sections 7 and 8. The type locality of this sand, section 17, does not report any gas. The Kirkwood sand shows a scattered record of gas in its many wells, but particularly in section 17.

### LAWRENCE TOWNSHIP.

The Kirkwood sand shows gas in most of the wells in Lawrence township. The Bridgeport and Buchanan sands show no gas while the McClosky gives data from about six wells. There are no commercial gas wells in the township.

### DENNISON TOWNSHIP.

The Bridgeport sand shows a number of gas wells in sections 1, 2, 34 and 35. Most all the wells penetrating the Bridgeport lenses record gas in them. The Kirkwood sand gives numerous records of gas over the township but particularly in sections 22, 23 and 36. The McClosky sand shows abundant gas in sections 25 and 36. The gas would be marketable from this sand but for the enormous yield of oil.

### RELATIONS OF STRUCTURE TO SALT WATER.

The sands of Lawrence county show abundant water along the flanks of the anticline and but little through the center of the field except in the lower Bridgeport and Buchanan sands. The Pottsville rocks appear well saturated with water over the entire field and into the limbs of the LaSalle fold. The Chester sands are not uniformly saturated with water but seem to have limit lines of saturation along the limbs of the fold, more particularly along the western side. The McClosky sand similarly shows abundant water on the western slope of the fold and in parts of Petty township.

### PETTY TOWNSHIP.

There is but little water shown in the record of wells in the producing sands of Petty township. The Bridgeport and Buchanan sands are closely associated and show abundant water in sections 1, 2, 19, 20, 29, 30 and 36. The Kirkwood sand shows some saturation beneath the oil in sections 12 and 36. The McClosky sand shows some water content in sections 12, 13, 15, 24 and 25.

### BRIDGEPORT TOWNSHIP.

All the sands in sections 1, 18 and 36, Bridgeport township dip low on the western limb of the anticline and show much water. The upper Bridgeport lenses, like those of the Robinson sand of Crawford county, are generally barren of water within the oil pool in this region. The lower lenses are widely saturated in sections 6, 7, 8, 31 and 32. The Buchanan sand is completely saturated with water in sections 6 and 31, but water underlies the oil zone in its type locality, section 17. The Kirkwood and McClosky sands are usually free from water in this region, except along their outer edges.

### LAWRENCE TOWNSHIP.

The Bridgeport sands contain abundant water in Lawrence township. The Buchanan sand is water-bearing in sections 2, 11, 12 and 14, but

contains less water and is oil-bearing in section 16. No water is reported for this sand in section 15. The bottom of the Kirkwood sand contains water in sections 1 and 13. The Tracey sand, in several cases, shows abundant water in section 10. The McClosky sand is reported water-bearing only in section 1.

#### DENNISON TOWNSHIP.

The lower Bridgeport lenses and Buchanan sand contain water over most of Dennison township. The upper lenses are productive at the southern end of the field and show some water beneath the oil in section 2. The Kirkwood sand shows water beneath the oil in sections 1, 5, 6, 7, 24 and 30. The McClosky sand is wet in sections 19, 24, and in the northern part of 25.



## CHAPTER V.

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### General Summary of Geological Conditions in Crawford and Lawrence Counties.

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#### GENERAL STATEMENT.

The features of the structure maps of the different sands, and their individual oil, gas, and salt water relations just described, are sufficiently similar to permit general conclusions as to the accumulation of oil and gas in Crawford and Lawrence counties. These conclusions add to the general fund of evidence confirming the accumulation of oil and gas in folded rocks.

#### GENERAL STRUCTURE OF REGION OF THE LA SALLE ANTICLINE.

The greater portion of Illinois lies within the Eastern Interior Coal Basin, which is, broadly speaking, an extensive spoon-shaped basin, with its long axis extending along a line through Cerro Gordo, Lovington and Olney and with its deepest part in Wayne, Hamilton and Edwards counties. The east side of the basin rises into a strong longitudinal fold known as the LaSalle anticline, which extends from the vicinity east of LaSalle in a southeastern direction to Sadorous in Champaign county. From thence it passes near Tuscola and enters the oil territory of Clark county near Westfield. It continues in a direct line through the oil fields in Clark, Crawford and Lawrence counties until the vicinity of St. Francisville in the latter county is reached. The identity of the fold is lost beyond Lawrence county but it is thought to cross the Wabash into Indiana and possibly merges into the eastern flank of the Illinois basin. The writer has compiled several structure sections<sup>1</sup> which illustrate these facts.

The formations ascend from the axis of the basin into the Crawford and Lawrence county oil fields at the rate of about 50 feet per mile. The ascent becomes more rapid in Lawrence county because of the presence here of the very sharp apex of the anticlinal dome.

The sands of the Illinois basin have been thoroughly tested immediately west of the oil fields and found full of salt water. The lower

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<sup>1</sup> Ill. State Geol. Survey, Bull. No. 16, 1910, pls. 7 and 11.

flanks of the fold are known to yield abundant salt water in all the sands which are productive in the main fields. The conditions for the accumulation of oil and gas in the fields are ideal because of the presence of the following governing factors:

1. There is an extensive anticline with a marked basin on at least one side.

2. The depressions on both sides of the fold, showing abundant water, comprise extensive "feeding areas" for the arch.

3. The sands are commonly porous and hence form suitable reservoirs for the storage of oil.

4. There are abundant shales and limestones overlying the sandstones which originally furnished the oil and now probably serve as impervious covers to the reservoirs.

5. The sands in both limbs of the anticline are abundantly saturated with salt water which is probably instrumental in holding the oil and gas captive in its present position. This consideration is highly important because of the relations of water and oil and the resultant concentration of oil in folded structure.

6. The portion of the arch containing oil is six to seven miles in its extreme breadth and one or two miles wide in the narrowest places. The large amplitude and breadth of the arch offered an enormous reservoir capacity.

#### DETAILED FEATURES OF THE FIELDS.

The detailed discussion of the structure in the Crawford and Lawrence county field proves conclusively the presence of a major fold governing the accumulation of oil and gas in this region. The crest of the fold, however, is shown to be very irregular. It is interrupted by numerous minor domes and transverse depressions, which perhaps have been instrumental in segregating the pools. The succession of irregularities culminates in a very extensive uplift of the axis of the anticline north of Bridgeport, Lawrence county, which has the appearance of an elongated dome. Other portions of the anticline show a flattened crest or minor domes.

With one exception the best collection of oil was found over the extensive flat areas along the crest of the parent fold. The large dome in the Lawrence county field shows an exceptional accumulation of oil around its flanks but not at the crest. The domes over the entire area investigated are logical gas reservoirs. The gas, however, does not lay at the apexes of the domes but a short distance below. The best gas and oil wells on the dome in Petty township, Lawrence county, are from 50 to 100 feet lower than the apex. The smaller domes in Lawrence county show good accumulations of oil.

The uppermost part of the flanks of the major fold contain abundant oil. The oil decreases in quantity toward the outer boundaries of the field. The western limit is abrupt and the wells along this boundary produce abundant water. Enough data are at hand to conclude that this is a line of water saturation and that above this line and over the fold most of the sands are wholly oil-bearing. The Pottsville rocks are exceptional in that they contain water in the lower portions and in

some cases are wholly saturated over the fold. These rocks are widely distributed over Illinois and are conspicuous for their yield of salt water. The sands lower than the Pottsville and the upper Bridgeport and Robinson lenses do not show much saturation over the crest of the anticline. There are one or two spots in the field that show isolated patches of water-bearing sand, particularly in the Kirkwood and McClosky sands.

Some of the non-producing wells in the producing areas owe their condition to impervious sands or thinning out of producing sands. Lack of porosity will perhaps explain the position of dry wells often occurring at or near the very minor domes or small pits that occasionally exist along the crest of the fold.

### PROSPECTIVE POOLS.

It is probable that the high spots along the crest of the major fold, especially the one in section 30, Petty township, Lawrence county, represents cross folding or buckling. This condition would suggest that the territory east of the fold would be similarly affected, particularly in the lower producing formations. New pools are then possible to the east of the fold in positions and directions perpendicular to the trend of the field and parallel to the raised portions of the anticline. The presence of oil in Honey Creek and Montgomery townships of Crawford county seem to bear out this relation. The chief raised portions of the fold occur in section 1, the northwest corner of section 18, and section 30 of Petty township; sections 10 and 14, Lawrence township and sections 23, 26 and 35 Dennison township, all of Lawrence county.

The western side of the Crawford and Lawrence county oil fields, with one exception, is sharply defined and is bounded by a line of water saturation. In addition to this, the dip of the strata into the Illinois basin is so pronounced that the only possibility for new pools lies along unknown terraces, similar to the one occurring in section 29, Bridgeport township.

The extension of the south end of the field is problematical and almost impossible to forecast with the present development, owing to the lack of data and the uncertain character of the anticline. It is also likely that the gap between the Lawrence and Crawford county fields will remain barren as it seems to represent a large transverse basin on the fold.

Possibilities for the production of oil in sands in Crawford county, corresponding to the deep producing formations of Lawrence county, are slight because of the established fact that these formations gradually pinch out to the north of Lawrence county.

## CHAPTER VI.

### Economic Features of the Illinois Fields.

#### INTRODUCTION.

The discovery of profitable quantities of oil in Clark county in 1904 and 1905 led to a remarkably rapid development of the oil fields in the State. The development is all the more surprising when it is noted that in the short period of six years a production of such proportions reached its zenith. Other great fields of America required as high as 30 years to attain such a position. Besides, the Illinois production comes from the smallest areal extent of oil producing territory of the first seven ranking states:

Rank.	State.	Square miles of petroleum lands.
1	California	850
2	Oklahoma	400
3	Illinois	250
4	West Virginia	570
5	Ohio	650
6	Texas	400
7	Pennsylvania	2,000

Illinois gained ninth place for production and value of oil in 1906 and third place for both in 1907. Since 1907 the State has held third place for production and second for value and has been exceeded only by California and Oklahoma. Up to January 1, 1912, about 19,982 wells had been drilled for oil and gas in the State, of which 15.7 per cent were barren. The remaining 84.3 per cent have produced since 1905 about 157,905,084 barrels of oil, valued at about \$101,666,473. The extent of the fields, the grade of the oil, and the efficiency of production, place them among the greatest of the world from an economic point of view.

The successful growth of the Illinois fields may be attributed particularly to the quiet efficiency of experienced and capable oil men. The Appalachian fields supplied the greatest influx of operators, and these, through many years of training, determined the trend of development. They soon established the limits of the field and thus prevented useless explorations.

After oil has been found in commercial quantities in the shallow Casey pool, the operators began to drill in all directions. They were, however, soon limited east and west of Casey by boundaries which were defined by barren wells that either failed to show oil or yielded large quantities of salt water. This caused a shifting of the development inward and along a north and south direction. The discovery of oil in deeper sands in Crawford county led to the same tactics of development, and eventually the long narrow strip of oil country in Clark county approached the broader pool of Crawford county. Similarly, the movement continued from the deeper productive fields of Lawrence county.

The Illinois fields are somewhat different from others because of local conditions and the necessity of properly and economically caring for enormous quantities of oil. The business is divided into many branches, each of which, from the first step of leasing to that of an established production, requires careful and systematic attention. The Ohio Oil Company (Standard) controls most of the production and under its management, there have sprung up various departments necessary to cope with the rapidly increasing yield of oil. This has been done remarkably well and as has been truthfully said, "there never has been an oil field so well taken care of in so short a time as that of Illinois."

The following general discussion of the several phases of the oil business is made with a view of enlightening those readers who are not familiar with the business. It is not intended to be an authoritative explanation of the methods used in developing an oil field or of the details of drilling a well.

## DEVELOPMENT OF OIL PROPERTIES.

### FORENOTE.

The first step necessary to the development of any oil field is a business-like lease of the land, conveying distinct rights to both the landowner and the lessee. The successive steps of choosing well sites, drilling, shooting wells, and equipping oil properties involve activities separate from each other, yet so connected that each is a necessary part of the whole. In fact, the largest oil companies in Illinois have separate branches for leasing, drilling, buying, pipe-line discharging, telegraphing, and engineering.

The first step of the oil operator after learning of an "oil strike," is to lease as near as possible to the producing wells. If he has sufficient knowledge of the geological structure of the area, he follows the trend of the anticline or terrace, as the case may be. If he feels that his properties are within the limits of possible producing territory, he makes his locations and starts his drilling.

It is regrettable that many inexperienced operators are attracted by the rush to newly proven areas and by lack of knowledge of both the nature of the business and underground conditions, are led to failure. It is often the case that such novices open up a field. Any observer of the oil business will soon note, however, that the larger companies and operators do but little "wildcatting," preferring to profit by the ex-

ILLINOIS STATE GEOLOGICAL SURVEY.

Bull. No. 22, Plate XVI.

The standard derrick.

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perience of the novice. It is true also, that field limits of many proven areas are established only by these indiscriminate test holes.

### LEASING.

In contrast with the oil territories of the mountainous Appalachian regions and of the far west, Illinois is a drift-covered plain. All of it is either in cultivation or devoted to pasture. The land divisions are simple and uniform and are based on the civil township of thirty-six sections. Each section usually is sub-divided into tracts of the multiple of twenty acres. The leasing of properties then starts upon a simple basis.

There are no set rules concerning leasing as this is necessarily dependent upon local conditions. The oil men deal entirely with individual land-owners, and leases are private bargains. While some of the territory is developed by land-owners, it is more often leased to operators for a period of five years, with option of further lease as production continues. If adjoining property is untested at the time of leasing, the farmer usually receives a royalty of from one-eighth to one-sixth of the future production, with the further stipulation that drilling is to begin within six months to two years, or that a stated rental per acre will be paid until the first well is drilled. If, on the other hand, the desired property lies near producing territory, the land assumes added value and a bonus is demanded in addition to the royalty and the reservation of the fee. The closer the farm is to good oil properties, the higher the bonus becomes; it averages from \$10.00 to \$40.00 per acre, but sometimes reaches \$200.00 or more per acre.

The land-owner retains all surface rights of the land, except on the portion necessarily used by the operator for his equipment, including a full quota of wells, power house, boiler house, tankage, waste pit, and pull rods. Upon an 80-acre tract not more than six acres are necessary for this. A large portion of the land in the oil district is not considered especially valuable from an agricultural point of view and consequently but little restriction is placed upon the operations.

In certain portions of the field, industrious farmers till their ground and at the same time derive a good income from oil. If a large storage of oil is contemplated it is customary to buy the land outright for a so-called tank-farm.

Stipulations are usually made regarding the use of gas by the land-owner and of payment by the lessor for active gas wells. This generally averages from \$100.00 to \$200.00 per well per year. There are but few large gas wells in the Illinois fields and the income is insignificant as compared with that derived from the vast production of oil.

The lessee further agrees not to drill wells closer than 200 feet to any dwelling or barn, except in the case of town lots. (See Pl. XXIII, B.) This may be made optional with the land-owner and merely serves as a protection to his perishable property.

It is also agreed that the lessee shall be responsible for all damages caused to growing crops, provided there is enough in amount to warrant complaint. Oftentimes when a well is shot and a good flow is secured, the wind will spray the oil over a considerable area of growing grain

and will thus render it unfit for use. Again careless driving over cultivated ground will destroy a portion of the crop and so warrant complaint. All pipe lines are buried below plow depth.

After production is established, the lease becomes the most valuable part of the oil property. It is often sold, the price depending mainly on the number of producing wells and their average daily yield. A transfer of lease often takes place even though no wells have been drilled on the tract. The price of this is dependent upon the distance from proven property. In fact, lease speculation has become a very lucrative business, particularly in newly opened areas. The speculator watches the prospecting and upon the first news of the oil strike, rushes to the locality and leases what he can without a great amount of expense. The demand for land "close up" to the active wells soon outstrips the supply and the unfortunate operator who is late or who really wishes to drill, is forced to pay the speculator's price. A good example of this type of traffic was shown in the recent Carlyle, Illinois excitement.

The following form of lease is in common use in Illinois:

ILLINOIS STATE GEOLOGICAL SURVEY.

Bull. No. 22, Plate XVII.

The steel derrick.

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# OIL AND GAS LEASE.

Agreement, Made and entered into the ..... day of .....  
and between ..... A. D. 191.....  
of .....  
..... County of ..... and State of .....  
..... of the first part, and .....  
..... party of the second part.

WITNESSETH, That the said part.....of the  
acknowledged, and of the Covenants and agreements hereinafter  
second part to be paid, kept and performed ha.....granted  
lease and let unto the said party of the second part for the  
laying pipe lines and of building tanks and structures there  
ated in.....Township.  
described substantially as follows:

[illegible]

Containing ..... acres, more or less, hereby waiving all rights under and by virtue of the homestead exemption laws of this state, reserving, however, therefrom, one hundred feet around the buildings on which no well shall be drilled by either party except by mutual consent.

or  
in force for the term of five years from this date, and as long thereafter as oil or gas  
in paying quantities by the party of the second part.

**USES, the said party of the second part covenants and agrees.**

1st: To deliver to the credit free of cost in the pipe line to and in the leased premises, and the gas from each and every payment to be made on each therefor while the gas from

2nd: To pay (from which gas only is produced) drilled on said premises, and make well within 60 days after commencing to market gas therefrom, as aforesaid

agrees to locate all wells so as to interfere as little as possible with the farming operations on the leased premises, and to commence a well on said premises within the time specified in the lease, and to complete the same within the time specified in the lease, and to pay thereafter at the rate of \$100.00 per month for each additional three months such commencement is delayed, and it is agreed that the commencement of such well shall be deemed to be the commencement of the well.

*Oil and Gas Lease—Concluded.*

such well, as aforesaid, shall be and operate as a full liquidation of all rental under this provision during the remainder of the term of this lease. Any payments falling due may be made direct to lessor. .... or deposited to .....credit in .....

Second party agrees to bury all pipe lines below plowing depth when requested by first par.....

Second party agrees to pay all damages to crops caused by his operations on this land.....

..... IT IS AGREED, That the second party is to have the privilege of using sufficient water, oil or gas from same (except water from wells, ponds or cisterns without consent of first part.....) and at any time to fixtures placed on said premises, and further, upon the payment of One Dollar, at any time, by the party of the first part, said party of the second part shall have the right to surrender this lease for all payments and liabilities to accrue under and by virtue of its terms shall cease and determine and this lease shall be null and void

It is expressly understood and agreed that all agreements, terms and stipulations contained herein shall extend to respective heirs, successors, administrators or assigns of parties hereto.

Witness the following signatures and seals.

WITNESS:

..... (SEAL)  
 ..... (SEAL)  
 ..... (SEAL)  
 ..... (SEAL)

A.

B.

- A. A nitroglycerine plant.
- B. A storage magazine for nitroglycerine.





## CHOOSING A WELL SITE.

When the lease is secured and the operator is ready to drill, he must choose the site for his first well. This is governed by one or two generally recognized rules or courtesies and many local circumstances. It is usually the custom to place wells about 210 feet inside the property line. This varies, however, with different depths of sand. Wells in the shallow fields are often placed 100 feet, or perhaps less, from the property lines. The drilling is usually inexpensive and many wells are drilled in the eager demand for the oil, with the result that such a field is quickly drained. The location lines in Crawford county are almost always maintained at the regular interval of 210 feet from the line but in the deep Lawrence county pools the distance is from 250 to 300 feet. The distance between wells on the same lease depends on expense and other factors. In the Clark and Crawford county fields they are generally placed 450 feet apart, but in Lawrence county, wells to the deeper sands are located 660 feet apart.

An unwritten law among operators in most fields requires the lessee to drill opposite producing wells on adjoining property. This is called "offsetting" and is done to protect property lines and prevent drainage of oil from the lease. It has been legally determined that a landowner can bring suit to make a lessee "offset" wells or else secure the surrender of the lease. It is the custom to offset all adjoining wells on the neighboring leases and leave the centers to be drawn upon. The free space in an 80-acre tract thus measures 900 by 2,250 feet. The line wells then draw to good advantage, and unnecessary center wells are avoided. It is a difficult matter to estimate the acreage drawn upon by oil wells. This is dependent upon the thickness and porosity of the sand, the area of the pool, and the location distances of the wells. It is estimated that about five acres are drawn upon by the Clark county wells, eight in Crawford county, and ten to twelve in Lawrence county. Without considering center wells, twelve to fourteen are drilled on an 80-acre tract in Clark and Crawford counties and from eight to ten in the Lawrence county field.

The choosing of a site may be affected, furthermore, by sudden dips in the sand about a regular location, thus breaking up the regularity of location lines. Further irregularity may be caused by the presence of buildings, permanent power houses, or unfavorable topographic features. It may seem advisable to even shift wells from a drift covered valley to the side of a hill where less expense is incurred in placing the drive-pipe. Well locations are often chosen in prospective areas with respect to the water and fuel supply. The advance of oil operators into active coal fields of the State may necessitate selection of well sites so as not to endanger mines and their employees.

## DRILLING.

The third step in the development of oil properties is a contract between the operator and the drilling contractor. An agreement is drawn up between the two for the drilling at a certain price per foot, dependent upon the locality and the depth of the desired sand. A uniform rate is usually established by the supply houses in an active oil field. Drilling

in "wildcat" areas usually costs more than in a proven area because of the distance from railroads and the lack of material, fuel, water, etc. Deep sands and peculiar formations also affect the cost per foot of drilling.

Stipulations are made in the contract for drilling a specified depth and the contractor is held responsible for the well to that depth, or possibly to the extent of reaching the desired sand and determining its productivity. The agreement states that drilling shall begin within a specified time.

The contractor is responsible for the purchase and construction of the derrick. He furnishes boiler, string of tools, fuel, water, drillers and tool-dressers, and is held responsible for accidents. The contractor must replace the casing after a successful shot; clean out the well and pump it for a specified time free of charge, and tube the well. Should further cleaning be necessary after the time stated, a charge is usually made by the contractor for this service at the rate of \$15.00 per day and the operator furnishes fuel and water. A rate of \$2.50 per day is usually made for extra pumping. The contractor is permitted to use any oil or gas as fuel for drilling that he may find during the progress of his well. If the contractor experiences trouble in setting his casing, he is usually paid a reasonable amount for labor. In case a dry hole is secured the contractor must pull all the casing possible and in the event of a producing well he must draw that casing which is not desired in the well. In all events the contractor must put the well in order for pumping.

The operator, on his part, usually agrees to furnish conductor, drive-pipe, casing, tubing, and rodding. He provides for hauling the pipe and necessary accessories other than the driller's string of tools and rig. The operator is responsible for the plugging of a dry well and the filing of the affidavit thereto.

When the contract for drilling is signed, the operations pass into the hands of the contractor, who in turn contracts with the rig-builder. Nearly all rigs in the Illinois fields, outside of the Clark county pools and portions of Crawford county, are of the Standard type. (See Pl. XVI.) They are constructed of timber and consist of four strong up-rights held in the shape of a pyramid by ties and braces, and resting on strong wooden sills. This derrick is used as a support for the sheave or crown pulley, which must be of sufficient height—66 feet in the shallow fields and 72 feet in the deeper fields—to swing the long, heavy, drilling tools free from the derrick floor. A second pulley is fastened to the top to swing the bailer free.

Connected with the derrick are principally the bull-wheel and shaft on which is wound the cable supporting the drilling bit; the walking beam, giving vertical motion to the tools; the band wheels, transmitting power from the engine to the movable parts; and the sheds to protect the engine, bull-wheel, and shaft from inclement weather. When these main portions of the derrick with necessary minor details are complete, the rigbuilder has fulfilled his part of the contract. The contractor then sets his boiler in place, adjusts his engine; winds his cables; places his swinging cranes for lifting the drilling bits; and does many trivial things necessary to facilitate his work.

A.

B

- A. Oil tanks under shed.
- B. A pumping disc.



The construction of the standard rig requires about three days and costs about \$500.00. The same derrick can be used about twelve times, at an extra cost of about \$100.00 each time for tearing down and rebuilding and for additional repairs and materials.

The steel derrick (see Plate XVII) is used in some portions of the field, though not extensively. The uprights are of steel and the braces and ties are of wire, cable or thin steel rods. The sheds, shaft, and bull-wheels are of wood. The steel derrick can be torn down easily and moved indefinitely but its original expense is much greater than the standard derrick. The leading objection to the steel derrick is the probability of breaking or twisting pieces of the frame work during transportation and causing delay in expense and repair.

In the shallow fields a portable drilling rig is more often used than a permanent one. The whole outfit is mounted on a heavy wagon and includes a single high timber, fitted up as a derrick, while the remaining necessary parts are assembled in a compact manner back of it. This rig is not practical for deep sands or hard formations. There are two types of portable rigs, known as the "Star" and the "Parkersburg." Their cost, including all equipment, is about \$2,300.00. A larger type of portable drilling rig has been perfected recently that is suitable for deeper sand pools. The cost of this rig is about \$10,000.00.

The costs of drilling wells in Illinois has gradually declined since the opening of the Casey field in 1906. At that time the cost was \$1.00 per foot when fuel and water were not included, and 90 cents per foot when they were supplied. The following costs of drilling are representative for the various pools:

*Cost of Drilling in Illinois Oil Fields.*

Pools.	Depth.	Cost per foot.
Clark county, 400 to 500 feet.....		\$0 80
Crawford county, 750 to 1,000 feet, 1907.....		1 00
Crawford county, 750 to 1,000 feet, 1908.....		0 90
Crawford county, 750 to 1,000 feet, 1909-1910.....		0 80
Crawford county, 750 to 1,000 feet, 1911.....		0 70 to 0 85
Lawrence County—		
Bridgeport sands, 800 to 950 feet, with 10-inch drive-pipe and 6 5/8-inch casing.....		0 80
Bridgeport sands, with 16-inch drive-pipe and 8 1/4-inch casing .....		1 35
Buchanan sands, 1,250 to 1,400 feet.....		1 35
Kirkwood sands, 1,450 to 1,650 feet.....		1 50
Tracey sands, 1,700 to 1,750 feet.....		1 50
McClosky sands, 1,775 to 1,875 feet.....		1 50

The approximate time required to drill, shoot, clean, and put in order a well in the different pools is as follows:

Pool.	Days.
Clark county, or Shallow sands.....	4 to 5
Crawford county .....	10 to 12
Lawrence County—	
Bridgeport sands .....	10 to 12
Buchanan sand .....	20 to 25
Kirkwood sand .....	35 to 45
Tracey sand .....	60 to 75
McClosky sand .....	60 to 100

The Bridgeport sands were the first developed in Lawrence county and were drilled with the small sized pipe similar to that used in the Robinson sand of Crawford county which is at the same depth. Later when the deeper sands were discovered and found more prolific, it became impracticable to use 6 $\frac{1}{4}$  inch casing. To secure production from all sands, therefore, a larger size drive-pipe and 8 $\frac{1}{4}$  inch casing were introduced. The operators found it profitable to drill new wells with larger size pipe rather than redrill the older ones. The old wells were allowed to produce until abandonment and, indeed, there are many that are still producing. These lie close to the town of Bridgeport.

The drilling crew consists of two drillers and two tool-dressers, who work by pairs in shifts or "tours" of twelve hours each. It is the duty of the driller to stay close to the mouth of the bore, regulate the cable and temper screw when necessary, control the machinery, etc. The tool-dresser acts as an assistant, fires the boilers, attends to the engines, dresses or sharpens the bits, assembles the small tools, switches the bull-wheel cable, etc. The average daily wages of drillers is \$5.00 and of tool-dressers \$4.00.

The first process in the drilling of oil well is that of "spudding"—a method used in drilling the first 75 to 150 feet through what is known as the drift, and usually stopping at bed rock. The drift is composed of soil, sub-soil, clay, gravels, and sands, and is usually soft. A short cable is fastened by a shoe to the crank of the band wheel and to the general cable extending from the bull-shaft over the crown pulley and to the spudding drill in the well. As the band wheel turns, the short cable jerks the tools up and down. The bull-shaft is clamped while the spudding is going on and when it is released the cable and spudding drill are fed downward into the hole.

The hole is usually started in a large size conductor and the spudding apparatus is guided by hand. The regular drilling bit and stem are too long and heavy to manipulate for spudding.

When the spudding has been completed the stem and bit are substituted and are connected to the walking-beam and temper screw which lift the tools and cable at a varying rate of speed, dependent upon the depth of the well and the condition of the formations. The walking-beam rocks back and forth on an upright post independent of the derrick and so gives vertical motion to the cable and drill. The temper screw is fastened to the end of the walking-beam. The cable is clamped to the lower end of the screw and as it is necessary to lower the drill, a handle is turned and the tools are fed downward. The driller determines the lowering of the cable by the feel of the rope or its tension, and the temper screw is adjusted accordingly.

The temper screw varies in size from four to seven feet, the average screw-depth measuring five feet. The difference in length is due to the spring of the hemp cable. After a screw-depth of drilling has been accomplished the tools are withdrawn and a bailer is lowered in the hole. The bailer or sand bucket is a long section of hollow tubing with a ball and tongue valve at the bottom. As this is lowered into the thin mud and liquid at the bottom of the well, the valve opens and allows the bailer to fill. The weight of the liquid closes the valve as the bailer

A.

B.

- A. A modern tank-car loading rack.  
B. An early tank-car loading rack.





is lifted. When the bailer touches the ground at the mouth of the well, the valve releases and the slush pours out.

It is customary to place drive-pipe through the drift to bed rock. A square hammer is usually fitted to the top of the stem. The stem rests inside the pipe as the hammer strikes the top of it. When a section is driven its length into the hole, a second section is then coupled to the first and the driving is continued. The driving of the pipe is manipulated with the same apparatus used for spudding. The first casing is usually driven through the first salt water sand and, in the event of a bad cave, also through the caved material. Casing is never driven until it becomes necessary to do so. In case the driving of the pipe is difficult, a sharp heavy shoe is attached to the bottom.

### SHOOTING THE WELL.

When the oil-bearing stratum has been tapped and found productive the work is continued slowly until within a few feet of the bottom of the sand or until evidence of salt water appears. The driller notifies the operator who in turn arranges with the agent of a nitroglycerine company to bring the explosive and shoot the well. After the shooter has measured the sand accurately with a steel-line tape, he pours the nitroglycerine into tin shells  $5\frac{1}{2}$  inches wide by 5 feet long, holding from 10 to 20 quarts each; and by means of a lowering line, pulley, and special releasing device, lowers them to the producing sand. The shells are conical at the lower end and concave at the upper, so as to fit snugly together. The top shell bears a water-proof percussion cap connected by a wire to an electric hand-battery above ground. A "Jack-squib" is often used to explode the shot. This is a tin tube, about 3 feet long containing a dynamite cap packed around with sand. A fuse is extended from the squib and is lighted and lowered. This is used when the hole is clean and not caving and when the casing is not pulled before the shot. In some cases the squib may contain a small quantity of nitroglycerine and be arranged to explode with a time fuse. The explosion opens a large cavity in the producing sand and cracks the bed for a wide radius, thus allowing the contained oil and gas to flow to the well. The greatest care is used in placing the shot in order not to disturb the overlying shales or the underlying sand, which usually contains salt water. If the shales are loosened to any extent they fill the cavity with debris and make the work of cleaning the well difficult. In case it is known that the lower sand does not contain salt water, drilling is carried through the sand and a pocket is made by the explosive to catch the caving material. If the salt water sand is tapped, a flow is often started that is difficult to control and which often drowns out the oil. In such a case the well is usually abandoned, although instances are known where the salt water head has been pumped off and a production of oil secured later. If it is desired to shoot the sand some distance from the bottom, an anchor, or supporting tube for the shot is placed at the bottom of the sand. If there are two producing sands close together two charges are set and an anchor, loaded with nitroglycerine, is placed between the sands. The explosion of the upper shot transmits the force to the second through the anchor.

The size of the shot depends upon the texture and thickness of the producing sand. It has been found that 30 feet of sand requires about 60 quarts of nitroglycerine. A charge of 80 to 100 quarts is sufficient for all sands in the Illinois fields. It is usually the custom to leave the 8 and 10-inch casing in the well and pull the casing near the producing sand previous to the shooting. This eliminates danger of collapsing or mangling. The casing is lowered later in cleaning the well.

About ten seconds after the shooter has discharged the explosive there is a quick jar of the earth, followed by a muffled report. With a roar the gas pours forth from the well in a bluish-white streak, followed, shortly, by a column of oil and water. This rises slowly to above the top of the derrick, where it sprays out in the direction of the wind. The rattling pebbles against the derrick, and the heavier thuds of large fragments on the ground are heard for several minutes. The column of oil subsides in a short time and the drillers cap the well or turn the flow into emergency tanks.

The shooters hold responsible positions and are chosen by the explosive manufacturers for their cool-headedness and skill. They receive salaries from \$100 to \$125 per month and usually a bonus for successful work and good behavior.

The torpedo company, through its shooter, is held responsible for the well from the moment of taking charge, and, if a premature shot takes place through carelessness or neglect, must arrange to drill another well immediately near the same location or pay for the ruined well. When the shot is successful the contractor resumes charge of the well and completes it by cleaning out and putting it in order for pumping. In all cases the shooter is required to know that the well is in perfect condition before shooting. It often occurs that after his explosive is partially set, the overlying formations cave and cover the shot. The shooter and drillers coöperate and clean out the well very cautiously to the top of the shot. Several days of the shooters time are thus required before he can complete his task, at an extra cost to the company.

The torpedo companies maintain manufacturing plants in isolated spots in each main field (see Pl. XVIII, A). Small storage magazines are built in other out-of-the-way places, usually one-half mile from any dwelling, so as to distribute the supply and avoid large loss in case of accident (see Pl. XVIII, B).

Special transportation is necessary to distribute the nitroglycerine. Large stock wagons supply the magazines and lighter wagons make distribution to the wells. The nitroglycerine wagon is built on strong but flexible springs, and is easily recognizable because of the height of the bed above ground. The bed of the wagon is fitted with square padded cells for each 10-quart can of liquid. The words "Nitroglycerine, Dangerous," are printed on the outside of each wagon and serve to notify the public of the nature of the vehicle. The shooter usually drives along unconcerned over bumps and ruts, confident of the security of his peculiar wagon. Accidents are rare, but they, sometimes, may be caused by collision or carelessness in pouring the liquid into the cans. A drop on the side of a can may be exploded by friction. The viscous liquid is safely poured by a steady hand.

A.

B.

A. A power or pumping house.  
B. A boiler house.



Both liquid and solid nitroglycerine have been used in the field. The liquid explosive is a definite chemical compound, known as tri-nitro-cellulose. Glycerine is treated with a mixture of concentrated sulphuric and nitric acids at a temperature below 30° centigrade to prevent explosion. During the nitrating process water is given off and is absorbed by the sulphuric acid. The temperature of 30° centigrade is kept uniform and is effected by blown air during the mixing. The rate of mixing is slow and regular. After mixing the product is washed with water to remove the surplus acid. The solid nitroglycerine is made into cylindrical forms and has the appearance of a yellowish transparent jelly. It has the consistency of rubber and can be readily handled without danger, both during transportation and at the well.

The process and product are patented. The liquid explosive is preferred because of its efficiency. The standard prices for the explosive are as follows:

Quarts.	Value.
10 .....	\$25 00
20 .....	40 00
30 .....	47 50
40 .....	55 00
60 and more, per quart.....	1 15

Other charges include 2 cents per foot for electric wiring, and in case of delay, an extra charge of \$15.00 per day for the time of the shooter.

#### LEASE EQUIPMENT.

##### CLEANING OUT AND TUBING THE WELL.

After the well has been shot and a production of oil assured, the drillers clean it out in a manner similar to the original drilling. The bit is worked through any accumulated debris and the bailer brings up the slush. The pocket or cavity is emptied and thus serves as a reservoir. A two-inch tubing, containing a 5/8 inch sucker rod and cup, usually placed in the casing to the sand and is connected to the pumping machinery. If the well is the first one, the rod is set to pumping directly from the walking beam. If the well is one of several, it is connected to the power-house by a pumping jack. A three-inch tubing is often used if the well is a large one or large quantities of salt water are encountered. The cost of tubing is 11½ cents per foot. During the life of the well cups often become worn or loose and are repaired by the use of a portable cleaning rig. (See Pl. XXVII, B.)

#### TANKS.

The oil from the first well is sent to emergency tanks and from later wells to the lease tanks. The tanks are usually low cylinders, built of wooden staves and steel bands. They range from 100 to 1,600 barrels capacity. The smaller tanks are transported to a well when oil is found and are used to receive the supply until the permanent lease tanks are located and built. The usual 250-barrel tank measures 2½ barrels of oil to the inch or 25 barrels to ten inches of depth. The cost of this

size tank is about \$90, and of the 1,600-barrel tank about \$450. Second hand 250-barrel tanks cost about \$50 and are preferred because they are saturated with oil and less liable to leakage. When several tanks have been built on a lease, sheds are placed over them for protection from evaporation and to prevent their warping by the sun's heat. (See Pl. XIX, A.) The average cost of these is about \$60, although the cost is dependent upon the size.

#### LOADING RACKS.

The oil from a new field is generally sent by donkey-pump to the nearest railway loading-rack (see Pl. XX, B) and is shipped by tank-car to the refineries or to manufacturing companies who have use for crude oil. The racks are usually composed of upright tubing of about two or three inches in diameter with swinging ends that fit into the mouths of the tank cars. They are connected direct to the pipe lines from the lease. The loading racks that are maintained in the fields at present are provided with facilities for measuring the exact amounts of oil shipped (see Pl. XX, A). Loading racks are installed at Bridgeport and Lawrenceville on the Baltimore and Ohio railroad; Lawrenceville, Birds, Flat Rock, and Robinson, on the Big Four railroad; Robinson, Stoy, Bakers Lane, and Oblong on the Illinois Central railroad; Casey and Oilfield on the Cincinnati, Hamilton and Dayton railroad; and Casey and Martinsville on the Vandalia railroad.

#### POWER AND BOILER HOUSES.

With four or five wells on a lease it becomes practicable to build a centrally located power-house for pumping them. The walls of the building are constructed of wood or corrugated sheet-iron, and the floors of cement (see Pl. XXI, A). A gas engine is installed at one end of the building, and at the other end an oscillating pull-wheel to give horizontal movement to the surface rods radiating from it to the different wells. The pull-wheel draws the surface rod toward the power and the weight of the sucker rod in the well assists in pulling it back, thus providing the necessary balance of work. A boiler-house is built close to the power house for emergency use and for steaming the oil (see Pl. XXI, B). The average cost of the power-house and boiler-house is about \$1,200. The 25-H. P. gas engines cost \$425; the 35-H. P. engines, \$585; the Mascot power, \$320, and the boiler, \$385. One equipment serves as many as 40 wells, but usually only 25 to 30. The power man in charge can not look after more than this number and accomplish his daily work. The power man makes the rounds of inspection, cares for his engine, boiler and oil tanks, and makes a daily report. It often becomes necessary on the larger leases to employ a helper. He is called the "roust-a-bout" and assists the power man in looking after the wells. The power fuel is usually gas and is generally piped from the wells in the lease. Some leases do not produce gas and it is then bought from another lease or from a nearby gas line. Steam is used if the lease is isolated or gas cannot be secured.

A.



B.

- A. The standard pumping-jack.  
B. The steel pumping-jack.







## PULL-RODS AND PUMPING DISCS.

The surface pull-rods are generally made of steel or wire cable. They are supported in a level line to the well by posts of various lengths, depending upon the undulations of the farm. Notches are cut in the top of the posts for guiding the lines, and are greased occasionally to minimize the friction of the rod. Wells may be pumped in spite of intervening buildings or two wells may be attached to one general lead-line by the use of suitable angle-knees. Large flat, oscillating pumping discs are often used to overcome surface irregularities or obstructions, and for pumping across highways (see Pl. XIX, B). They are placed in the open field and are connected to the power by large pull-rods, which move alternately and turn the disc through an arc of about one-fifth of a circle. Surface rods radiate from the disc to the wells.

## PUMPING JACKS.

The standard wooden jack, steel jack and "home-made" wooden jacks are used in Illinois. The standard jack is substantially mounted over the well on heavy wooden sills. (See Pl. XXII, A.) The workable portions resemble a right triangle, with the right angle pivoted, the upper acute angle fastened to the sucker rod, and the lower acute angle to the surface rod. The pull-wheel draws the lower angle outward and at the same time raises the upper angle and sucker rod. When the stroke is made the weight of the sucker rod pulls the jack to its normal position. The steel jack is similar to the standard wooden jack except for materials and weight. (See Pl. XXII, B.) With the home-made jack the angles are reversed and the action is one of pushing. (See Pl. XXIII, A.) Light weight jacks cost about \$10.00 and heavy ones about \$17.00. Sometimes wells are so arranged that the working balance between sucker and surface rods is uneven. In this case adjustment is made by weights upon the jack to push the sucker rod down or by weights at other points to aid the pull-rod.

## REMOVAL OF SALT WATER AND STEAMING OIL.

Salt water often accompanies the oil into the tanks and by difference in weight finds its way to the bottom where it is withdrawn by opening a bung-hole. It is the usual practice to run the oil into separating tanks where a siphon is so set that the oil runs one way into the lease tanks and the water flows in another direction into nearby streams. The oil often roils and assumes a yellowish color when it is pumped too hard. This is due to a suspension of sulphur which interferes with refining. The removal of the sulphur and other impurities is accomplished by precipitation with steam, usually for three hours in a 250-barrel tank. The sediment is piped away from the bottom of the tank to a shallow pit some distance from the buildings, where it is burned and prevented from polluting the streams. (See Pl. XXIV, A.) The waste pit is a shallow hole in the ground surrounded by a small dike. It is usually constructed at a lower elevation than the tanks in order to provide a flow by gravity. A recent investigation by federal officials has put a stop to running waste oil into streams. It is claimed that

the waste has killed many fish and contaminated the water in the Embarrass and Wabash rivers. During freshets, it has saturated the foliage and underbrush along their tributaries, and in several cases, this was later destroyed by fire. (See Pl. XXIV, B.) The pollution of the streams is not only unsightly but the waste becomes offensive after having stood through the heat of a summer. It is true, however, that the streams cannot be freed entirely from waste because the surplus salt water must be taken care of. The present system of burning has greatly minimized the problem.

THE APPROXIMATE COST OF OIL WELLS.

The following table presents the approximate cost of the first wells and the lease equipment in the various Illinois pools:

Cost of Wells and Their Equipment in Illinois.

Items.	Clark county.	Crawford county.	Lawrence county.				
			Bridgeport sand.	Buchanan sand.	Kirkwood sand.	Tracey sand.	McCloskey sand.
Rig.....		\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500
Drilling.....	\$ 360	700	750	1,750	2,300	2,500	2,800
Drive-pipe.....	80	90	90	90	90	90	90
Casing.....	250	800	900	1,700	2,800	3,400	3,800
Shooting.....	90	90	90	100	100	100	100
Tubing and pumping outfit.....	150	150	150	200	215	250	250
Power and boiler-house equipment.....	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Tanks and sheds.....	250	250	250	250	250	250	250
Belting and lead lines.....	100	100	100	100	100	100	100
Incidentals.....	100	100	100	100	100	100	100
Total.....	\$2,580	\$3,980	\$4,130	\$5,990	\$7,655	\$8,490	\$9,190

The above figures may be increased considerably if trouble is encountered in drilling the well or if the well is situated at a considerable distance from transportation. The second and succeeding wells cost less than the first one by about \$1,700.00 in Clark county, \$2,400.00 in Crawford county, \$2,300.00 for those in the Bridgeport sand, \$2,800.00 for those in the Buchanan sand, \$2,900.00 for those in the Kirkwood sand, \$3,500.00 for those in the Tracey sand, and \$3,800.00 for those in the McClosky sand. The rig, drive-pipe, a portion of the casing, tanks and power and boiler-house equipment serve for several wells. The incidentals include the expenses of the operator and the cost of teaming, which is dependent upon available teamsters and the amount of work being done, but which averages \$4.50 per day. The weights of the various sizes of casing most commonly used are,

10-inch .....	32 lbs. per foot
8¼-inch .....	24 lbs. per foot
6 5/8-inch .....	13 lbs. per foot

The general cost of drive-pipe, casing, tubing and rodding is as follows:

22

11-

12

S,

11

17

11

S

S

ILLINOIS STATE GEOLOGICAL SURVEY.

Bull. No. 22, Plate XXIII.

1

A.

B.

- A. A third type of pumping-jack.  
B. A town-lot well in Bridgeport, Ill.



Cost of Well Supplies in Illinois.

	Diameter— inches.	Cost per foot.
Drive-pipe.....	16	\$3.25
Casing (No. 50).....	12½	2.15
Casing (St'd).....	12½	1.24
Casing.....	10	1.09
Casing.....	8½	0.728
Casing.....	6½	0.5195
Casing.....	5½	0.407
Tubing.....	2	0.12
Oil line.....	2	0.098
Gas line.....	2	0.885
Sucker-rods.....	1	*4.04
Pull-rods.....	1	*3.57

\* Per hundred feet.

An idea of the enormous amount of casing and supplies used in the Lawrence county district is presented in Plate XXX.

THE COST OF OPERATING A LEASE.

The cost of operating a lease does not vary noticeably in the several Illinois pools and indeed is often negligible when compared with the earning power of the wells. The high cost of development, the interest on the investment, and the expense of plugging wells are the barriers to be overcome, particularly in the deep sand areas of Lawrence county before profits accrue to the operators. The shallow fields of Clark county have been among the most profitable in the world because of the low cost of development and the high returns. On the other hand the deep wells of Lawrence county have been just as profitable perhaps, but the expense of development has been very high. This was overcome by a high and steady production. The Crawford county area has been a valuable and safe field because of the steady yield of the wells and a rather low cost of development. The first wells in any field usually hold up better than later wells and naturally produce more oil, probably because the openings were made permanent under stress or pressure, etc. The essential feature in operating is to overcome first cost and the interest on the investment. In the shallow fields eight wells steadily making two and even one barrel per day are found to be profitable. One company has operated 100 old wells for two years that yielded totally, 150 to 300 barrels per day. The total cost of operation was \$600.00 per month. The yield of oil gave an average net income of \$3,000.00 per month, with a maximum of \$7,000.00 per month. The minimum cost of operating a lease should average about \$120.00 per month while the maximum should be about \$160.00. The pumper receives \$66.00 for care of a light lease and about \$72.00 for two small leases or a large one. The sum of \$20.00 is required for fuel, although the gas cost is usually low or nothing, and \$30.00 for teaming and supplies.

In a declining field, after the cost of development has been met, it has been found profitable to pump three or four wells of 5-barrel capa-

city. The monthly output from four 5-barrel wells, after deducting a royalty of one-sixth, is 500 barrels. At the current price of 67 cents per barrel January 1, 1912, the income is as follows:

Five hundred barrels at 67 cents .....	\$335 00
Cost of operating.....	140 00

Net income .....	\$170 00
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The net income from ten 5-barrel wells or five 10-barrel wells would be about \$700.00 per month.

### INVESTMENTS IN OIL PROPERTIES.

Investments in oil properties fall naturally into two classes—those in the wild-cat, or unproven territory, and those in developed fields. One deals with chance and the other is largely a definite business venture.

An investment in a wild-cat scheme is at all times uncertain because there is no assurance of finding oil. Wild-cat work is necessary for the development of any oil territory, but it should be left, if possible, to those large companies which have a reserve fund for such purpose. These companies are in a position to drill several wells before oil is found or the venture abandoned. The basis of wild-cat work may be a geological study, surface seepage or a previous exploitation of some kind. The area in consideration is then leased, often in lots as much as 40,000 acres, which in case oil is found, would naturally protect the interests of the active operators. The only definite knowledge the prospecting company might have in unproven territory would be the result of the work of a competent geologist. This knowledge should lead the company from drilling in the basins, which would probably be full of salt water and afford little promise of the presence of oil, to raised structures where conditions for the accumulation of oil are more favorable. The drilling bit alone will give evidence of the actual presence of oil or its absence. The man of small means should, for his own protection, beware of venturing into new territory but should, if possible, join a responsible oil company that intends to purchase a proven property and develop it as such. He could lease and drill only in a limited area and one or two unsuccessful attempts would force him to abandonment. It has happened, however, that in some instances the small operator has been successful and has opened up a field, but experience proves that, generally, the case is otherwise.

Investments in developed fields are matters of calculation and judgment. A usual custom of a purchasing company is to send representatives into a field to carry on a ten-day gauge on those properties the buying of which is under consideration. At the end of this time the value of the property is rated at a definite amount per barrel of the average daily yield of the lease. The usual price per barrel for future production is about \$400, though it often reaches \$500 or more, if a property is particularly desirable. If a 40-acre lease produces steadily 500 barrels of oil per day, the buying price would be  $500 \times 400$  or \$200,000.00. Under this investment a property with a reasonable decline should pay for itself in about three years. There is some opportunity

A.

B.

- A A waste pit for burning waste oil.  
B The effect of fire from waste oil on streams.





of failure even in producing areas through a sudden drain of the sands or a flooding of the area with salt water.

The actual amounts of oil won per acre are variable. Some portions of the field have yielded 6,000 barrels per acre and are still producing, though not extensively. Other portions with wells equally good in initial production have yielded only 500 barrels or less per acre. One tract produced 10,000 barrels per acre and from another of 20 acres over a million barrels of oil were taken. The last was only possible because the owner built his own storage tanks and pumped constantly. It is evident that this shrewd gentleman secured some oil which would have gone to his neighbors had they been similarly provided with storage.

The deeper and more prolific sands of Lawrence county have yielded much greater quantities of oil and perhaps will continue to do so, because of the several producing sands and the remarkable staying qualities of the wells. This area will probably be productive for a good many years, as has been the case in the Appalachian region. The shallower fields to the north with one sand, or two or more lenses of the same sand, are already showing signs of decline. The combined daily output of the Clark, Cumberland and Edgar county wells on January 1, 1912, was about 9,000 barrels as against about 40,000 barrels in 1907. The Crawford county yield reached about 20,000 barrels daily, as against 100,000 barrels in 1907. The Lawrence county production has steadily increased since the first development and at the present time produces more than the rest of the counties combined and about double that of Crawford county.

Since the Illinois fields were discovered, many men wishing to invest have found that the field was completely leased and that the only opportunity to share in the business was to join an established company or to organize a new company to buy partially or wholly developed tracts. Even this has been difficult because of the enormous prices asked for good leases and the scarcity of stocks of organized and prosperous companies.

The transfer of oil properties has been common in the last two years and has comprised dealings in both developed and undeveloped leases. The Ohio Oil Company, the producing agent of the Standard Oil Company, has been the most active purchaser of producing properties in Illinois. It has recently bought out many large companies such as the Jennings Oil Company, Parker and Edwards, Riddle Oil Company, Brown and Hogue, The Lee Oil Company, The North Fork Oil Company, and other smaller companies. Before these purchases it owned and operated leases to the amount of about 40 per cent of the fields. Its total holdings now are probably more than 70 per cent of the total development. This company buys and stores more than 90 per cent of the oil of the State. How much of the production comes from its own leases is not known, but certainly not less than half.

## BUYING, TRANSPORTING AND STORING OIL.

### BUYING OIL.

When the oil is steamed and ready to be sold, the power man notifies the gauger of the Ohio Oil Company or the Indian Refining Company,

who determines the quality and quantity of oil on each lease. A report or "ticket" is made and signed by the gauger and lease man and copies are retained by each while an additional one is sent to the purchasing company's office. The purchasing company enters the report on its books and in a short time checks are made out individually to all parties interested in the transaction under what are termed division orders. A division order is a tabulated form including signed and sworn statements that the operator has a certain interest in a producing company or in a lease and that the landowner has a royalty, usually one-eighth of the oil. The division order is kept on file with the purchasing company. A producer can hold his oil in storage for two months, and at the expiration of that time checks are sent at the prevailing price. The purchasing company pro-rates its own leases as it does those of individual operators and issues royalty checks directly to the farmer. In all reports 3 per cent of the gauged oil is deducted for leakage, sediment and evaporation, which goes on continually until the oil reaches the refinery. This is a natural loss and is borne by all interested in the production.

The auditing department of the Ohio Oil Company, Marshall, Ill., has one of the most complete systems of its kind. The amount of work done by it is enormous, and its thoroughness is attested by the scarcity of complaints from either landowner or operator.

#### TRANSPORTING THE OIL.

The Ohio Oil Company is not a common carrier of oil, but is a buyer. The old system of carrying oil at a certain rate in addition to storage has disappeared. During 1907 and 1908 the Ohio Oil Company built an extensive system of gravity pipe-lines for collecting oil from the greater part of the field. E. C. Bolton, chief engineer, made thorough detailed surveys of all the leases and all the stream courses through or near the field. Advantage was taken of the slope of the streams and pipe-lines were laid along them. Branch lines were run to each lease so that the oil, when released from the lease tanks, flows by its own weight into the general stream main, and down its course to a sub-station, where it is caught and pumped back through a larger main to the head pumping station at Martinsville, Ill. There are thirteen sub-stations in the main fields and one at Sandoval, Ill., located as follows:

#### *Location of the Ohio Oil Company's Pumping Stations in Illinois.<sup>1</sup>*

Order	Station—name.	Section.	Township.	County.
1	Martinsville.....	7	Martinsville .....	Clark.....
2	Stoy.....	2	Oblong.....	Crawford (see Pl. XXV A)...
3	Bridgeport.....	9	Lawrence.....	Lawrence (see Pl. XXVI)...
4	Casey.....	17	Casey.....	Clark.....
5	Cumberland.....	23	Union.....	Cumberland.....
6	Muddy Creek.....	20	Petty.....	Lawrence.....
7	North Fork.....	1	Licking.....	Crawford.....
8	Martinsville Tank Farm.....	13	Casey.....	Clark.....
9	Bailey.....	29	Martin.....	Crawford.....
10	Muchmore.....	14	Oblong.....	do.....
11	Tracey.....	13	Lawrence.....	Lawrence.....
12	Ackman.....	6	Dennison.....	do.....
13	Shipman.....	11	Martin.....	Crawford.....
14	Sandoval.....	7	Sandoval.....	Marion.....

<sup>1</sup> Kindly furnished by D. Roach, chief of pipe-line department, Ohio Oil Co., Marshall, Ill.

**A.**

**B.**

- A. The Ohio Oil Company's pumping station, Stoy, Ill.**
- B. The Tidewater Pipe Line Company's pumping station, Stoy, Ill.**



Each station controls the area north of it to the next station. From the head station at Martinsville, the oil is pumped through one 12-inch and two 8-inch pipes across Indiana and Ohio to eastern refineries, and through one 8-inch to Alton, Ill. The inter-state pipe-lines are pumped in relays, with sub-stations at Jamestown and Montpelier, Ind., and at Lima, Ohio. Oil is pumped at about 600 pounds pressure in the lines.

Gravity has displaced the old donkey pump that was formerly required on each lease, except in the extreme northern end of the field. The gravity lines extend northward within 2½ miles south of Casey. The donkey pump is still used in this area. The Ohio Oil Company pays one cent per barrel to the producers for steam used. The efficiency of the gravity system is twice as great as with steam and the cost is one-third as great. The cost of transfer by the gravity system is borne by the Ohio Oil Company. A regular force of men, aside from the company's corps of surveyors is kept at work improving and repairing the lines. The company keeps apace with new development and supplies new lines at fast as they are needed.

The Ohio Oil Company maintains engineering and surveying, discharge, and telegraph departments in its general offices at Marshall, Ill. The engineering and surveying department surveys and outlines sites for pipe-lines, pumping stations, tank farms, power-houses, district supply-houses, etc. It makes all field, farm, tank-farm, road and pipe-line maps. In fact, this branch of the work covers completely all the phases of work connected with civil engineering. It is occasionally called upon to make plans of specially needed machinery, or the construction of some special type of building. As yet these departments have done little toward determining structural relations of the formations and working out geological problems dependent upon this phase of work.

The discharge department has charge of the pumping of oil. This division merely regulates and checks the pumping of the oil into and through the interstate lines. The telegraph department of the company consists of a complete system of telegraph lines to all portions of the field, thus bringing its large force of employees into close touch with headquarters. Wires are also maintained and operated to eastern offices.

STORING THE OIL.

The production of the Illinois fields so far exceeds the capacity of pipe-lines that storage tanks have been established. Permanent tank farms are maintained at Martinsville, Stoy and Bridgeport. (See Pl. XXVII, A.) The sub-stations discharge the surplus oil to these tanks, where it lies until it can be pumped to the refineries. The Ohio Oil Company has 471 storage tanks which hold about 35,000 barrels each. These tanks are distributed in the oil producing counties of Illinois as follows:

Clark .....	235
Crawford .....	43
Lawrence .....	192
Marion .....	1
Total .....	471

The cost of each tank, including a circular dike for catching the oil in case the tank bursts or catches fire, is about \$9,000.00. The tanks are made of riveted steel plate, measuring  $\frac{1}{2}$  inch thick at the bottom and on the floor, and 3-16 inch thick at the top. They are 95 feet in diameter and 28 feet  $7\frac{1}{2}$  inches high. The floor space is 7,200 square feet. The total investment in tank-farms and equipment is about \$5,000,000.00. Other large companies maintain tanks, but they are scattered singly over the field.

Lightning has occasional heavy losses on tank farms. At least one dozen tanks have been destroyed in the last two years. (See Pl. XXVIII.) Lightning pierces the tanks easily and sets fire to the gases and oils. In a short time the top of the tank drops in and the flames send up dense, black, curling smoke, which presents a most unusual and startling spectacle. It requires about 24 hours for the entire contents of a tank to boil over its sides and 50 hours for the fire to burn out. At the time of boiling the smoke and danger are greatest. If the wind should be blowing strongly, any buildings, timber, or nearby tanks would probably be destroyed. The Ohio Oil Company always rushes a large force of men to the scene of a fire and takes every precaution to minimize the loss by strengthening the dike and removing inflammable material. The nearest pumping station is called upon to connect with the burning tank and draw out as much oil as possible with safety, usually about half the amount in the tank. The loss by fire of a tank full of oil is about \$20,000.00. The heat thrown off from a tank fire is intense and the effect on the tank is disastrous. (See Pl. XXIX.)

#### INDEPENDENT OIL COMPANIES.

The independent operators and oil companies have been forced to rely on tank-cars for oil shipments until recently, or to sell to the Ohio Oil Company. Most of them have preferred the latter plan. The Tidewater Pipe Line Company, with the Associated Producers Oil Company, however, has recently built an 8-inch line into the field and constructed a pumping station near Stoy, Crawford county, with a capacity of about 25,000 barrels daily. (See Pl. XXV, B.)

The Pure Oil Company which has been a large producer in this field, is said to have bought right of way for a second independent pipe-line. The Indian Refining Company of Cincinnati and New York has over 500 tank cars and 30 distributing stations, with refineries at Georgetown, Ky., Lawrenceville, and East St. Louis, Ill.; a combined capacity of about 8,000 barrels per day. The Sun Oil Company ships by tank cars and sells its oil for fuel. The Missouri-Illinois Oil Co. operates in St. Louis, Mo. The Central Refining Company has a refinery at Lawrenceville and secures oil from its own leases. The other companies that make shipments from the fields are the Cornplanter Refining Company, W. F. Watson of Bridgeport, Ill., and Rogers and Dibble of Oil City, Pa. It is estimated that the independents are handling between 9,000 and 12,000 barrels of oil per day. The Robinson Oil Refining Co. maintained a small plant at Robinson until the latter part of 1908, when it fell into the hands of a receiver and has since been idle.





ILLINOIS STATE GEOLOGICAL SURVEY.

Bull. No. 22. Plate XXVI.

The Ohio Oil Company's pumping station, Bridgeport, Ill.

## PRICES AND PIPE-LINE RUNS OF ILLINOIS OIL.

## PRICES OF ILLINOIS OIL.

The price of Illinois oil increased steadily from the opening of the field in 1905 to July of 1906. From 1907 to November, 1909, the decline was gradual. The price then remained steady for 18 months and since May, 1911, has begun to increase. From 1905 to 1907 inclusive all oil sold at one price, varying from 60 to 83 cents per barrel. A grading and division in price took place in 1908. The better grades of oil were found to lie between 30 and 35° B, while that of the Duncanville pool lies between 22 and 23° B. The Duncanville oil is sold only for fuel. The development of the Tracey and McClosky sands in Lawrence county gave still higher grades of oil, varying from 35 to 39° B. The difference of gravities necessarily caused a division of price and since 1908, oil above 30° B has commanded one price while that below 30° B has commanded another. The following table gives the average monthly prices paid for Illinois petroleum from 1905 to 1910, inclusive, as reported by Dr. D. T. Day and to January 1, 1912, the date of completion of this report, as supplied by the writer:

Average Monthly Prices of Illinois Petroleum, 1905-1911, Per Bbl.<sup>1</sup>

Month.	Year.										
	1905.	1906.	1907.	1908.		1909.		1910.		1911. <sup>2</sup>	
				Above 30° B.	Below 30° B.	Above 30° B.	Below 30° B.	Above 30° B.	Below 30° B.	Above 30° B.	Below 30° B.
January.....	.....	\$ .79	\$0.64	\$0.68	\$0.60	\$0.68	\$0.60	\$0.60	\$0.52	\$0.60	\$0.52
February.....	.....	.79	.65½	.68	.60	.68	.60	.60	.52	.60	.52
March.....	.....	.79	.67½	.68	.60	.68	.60	.60	.52	.60	.52
April.....	.....	.80½	.68	.68	.60	.68	.60	.60	.52	.60	.52
May.....	.....	.83	.68	.68	.60	.68	.60	.60	.52	.63	.55
June.....	\$0.60	.83	.68	.68	.60	.67½	.59½	.60	.52	.65	.55
July.....	.60	.82½	.68	.68	.60	.63½	.55½	.60	.52	.65	.55
August.....	.60	.71½	.68	.68	.60	.62	.54	.60	.52	.65	.55
September.....	.61	.64	.68	.68	.60	.62	.54	.60	.52	.67	.57
October.....	.64	.64	.68	.68	.60	.61½	.53½	.60	.52	.67	.57
November.....	.66	.64	.68	.68	.60	.60	.52	.60	.52	.67	.57
December.....	.70	.64	.68	.68	.60	.60	.52	.60	.52	.67	.57
Average.....	\$0.644	\$0.745	\$0.67375	\$0.68	\$0.60	\$0.64625	\$0.56625	\$0.60	\$0.52	\$0.6383	\$0.5466

<sup>1</sup> Mineral Resources of the U. S., 1910, Part II, U. S. Geol. Survey, 1911, p. 387.

<sup>2</sup> Compiled from files of the Oil City Derrick.

B.

A.

A. A portion of the Ohio Oil Company's tank farm, Stoy, Ill.  
B. A cleaning rig.



The Princeton, Indiana, Sandoval and Carlyle, Illinois oils are above 30° B. and are controlled by the market price of the better Illinois grades.

PIPE-LINE RUNS AND STOCKS OF ILLINOIS OIL.

The annual statistics of the production of petroleum in Illinois are compiled by Dr. D. T. Day of the U. S. Geological Survey and comprise the pipe-line runs of the Ohio Oil Company, Tidewater Pipe-line Company, and the Indian Refining Company, and the tank-car shipments of the Sun Oil Company, Cornplanter Refining Company, Indian Refining Company, Missouri-Illinois Oil Company, Central Refining Company, W. F. Watson of Bridgeport, Illinois, and Rogers and Dibble of Oil City, Pa. The actual production of oil is the amount which has been run from the producers tanks into the tanks of the transportation company, whether it is a railroad company or pipe-line, and from thence discharged through general pipe-lines to various refineries. The shipments recorded in the oil journals each month are used merely as a check to make accuracy more certain. The federal survey has in contemplation the collection of oil and gas statistics directly from the producer, thus placing a check on the general figures.

SUMMARY TABLES.

The total amount of oil produced previous to 1905, when the main fields were opened up, is almost negligible in comparison with the present annual production. The following brief table gives the yearly production from 1889 to 1911 inclusive:<sup>1</sup>

Annual Production of Oil From Illinois Fields, 1889-1911.

Year.	Bbls.
1889	1,460
1890	900
1891	675
1892	521
1893	400
1894	300
1895	200
1896	250
1897	500
1898	360
1899	360
1900	200
1901	250
1902	200
1903	0
1904	0
1905	181,084
1906	4,397,050
1907	24,281,973
1908	33,686,238
1909	30,898,339
1910	33,143,362
1911	31,317,038
Grand total	157,911,660

<sup>1</sup> Day, D. T., Mineral Resources of the U. S. for 1910, Part II, U. S. Geol. Survey, 1911, p. 331.  
<sup>2</sup> Day, D. T., Mineral Resources of the U. S., calendar year 1911, advance chapter, 1912, p. 64.

The two following tables present the ranks of the various petroleum-producing states for the years 1905-1910:

*Rank of petroleum-producing States, with quantities and percentages produced by each, from 1905 to 1911, in barrels.*

State.	Rank.	Quantity.	Percentage.
1905. <sup>1</sup>			
California.....	1	33,427,473	24.81
Texas.....	2	28,136,189	20.89
Ohio.....	3	16,346,660	12.13
Kansas.....	4	12,013,495	8.92
Indian Territory.....			
Oklahoma.....	5	11,578,110	8.59
West Virginia.....	6	10,964,247	8.14
Indiana.....	7	10,437,195	7.75
Pennsylvania.....	8	8,910,416	6.61
Louisiana.....	9	1,217,337	.90
Kentucky.....			
Tennessee.....	10	1,117,582	.83
New York.....	11	376,238	.28
Colorado.....	12	181,084	.14
Illinois.....	13	8,454	.01
Wyoming.....	14	3,100	
Michigan.....			
Missouri.....			
Total.....		134,717,580	100.00
1906. <sup>2</sup>			
California.....	1	33,098,598	26.17
Kansas.....	2	21,718,648	17.17
Indian Territory.....			
Oklahoma.....	3	14,787,763	11.69
Ohio.....	4	12,567,897	9.93
Texas.....	5	10,256,893	8.11
Pennsylvania.....	6	10,120,935	8.00
West Virginia.....	7	9,077,528	7.18
Louisiana.....	8	7,673,477	6.07
Indiana.....	9	4,397,050	3.47
Illinois.....	10	1,243,517	.98
New York.....	11	1,213,548	.96
Kentucky.....			
Tennessee.....	12	327,572	.26
Colorado.....	13	7,000	.01
Wyoming.....	14	3,500	
Michigan.....			
Missouri.....			
Total.....		126,493,936	100.00
1907. <sup>2</sup>			
Oklahoma.....	1	45,933,649	27.65
Kansas.....			
California.....	2	39,748,375	23.93
Illinois.....	3	24,281,973	14.62
Texas.....	4	12,322,696	7.42
Ohio.....	5	12,207,448	7.35
Pennsylvania.....	6	9,999,306	6.02
West Virginia.....	7	9,095,296	5.48
Indiana.....	8	5,128,037	3.09
Louisiana.....	9	5,000,221	3.01
New York.....	10	1,212,300	.73
Kentucky.....	11	820,844	.49
Tennessee.....			
Colorado.....	12	331,851	.20
Utah.....	13	9,339	.01
Wyoming.....			
Michigan.....	14	4,000	
Missouri.....			
Total.....		166,095,335	100.00

<sup>1</sup> Griswold, W. T., Mineral Resources of the U. S. for 1906, U. S. Geol. Survey, 1907, p. 830.

<sup>2</sup> Day, D. T., Mineral Resources of the U. S. for 1907, Part II, U. S. Geol. Survey, 1908, p. 348.

ILLINOIS STATE GEOLOGICAL SURVEY.

Bull. No. 22, Plate XXVIII.

A 35,000-barrel tank fire.



The two following tables present the ranks of the various petroleum-producing states for the years 1905-1910:

*Rank of petroleum-producing States, with quantities and percentages produced by each, from 1905 to 1911, in barrels.*

State.	Rank.	Quantity.	Percentage.	
1905. <sup>1</sup>				
California.....	1	33,427,473	24.81	
Texas.....	2	28,136,189	20.89	
Ohio.....	3	16,346,660	12.13	
Kansas.....	4	12,013,495	8.92	
Indian Territory.....				
Oklahoma.....	5	11,578,110	8.59	
West Virginia.....				
Indiana.....	6	10,964,247	8.14	
Pennsylvania.....	7	10,437,195	7.75	
Louisiana.....	8	8,910,416	6.61	
Kentucky.....	9	1,217,337	.90	
Tennessee.....				
New York.....	10	1,117,582	.83	
Colorado.....	11	376,238	.28	
Illinois.....	12	181,084	.14	
Wyoming.....	13	8,454	.01	
Michigan.....	14	3,100		
Missouri.....				
Total.....		134,717,580	100.00	
1906. <sup>2</sup>				
California.....	1	33,098,598	26.17	
Kansas.....	2	21,718,648	17.17	
Indian Territory.....				
Oklahoma.....	3	14,787,763	11.69	
Ohio.....				
Texas.....	4	12,567,897	9.93	
Pennsylvania.....	5	10,256,893	8.11	
West Virginia.....	6	10,120,935	8.00	
Louisiana.....	7	9,077,528	7.18	
Indiana.....	8	7,673,477	6.07	
Illinois.....	9	4,397,050	3.47	
New York.....	10	1,243,517	.98	
Kentucky.....	11	1,213,548	.96	
Tennessee.....				
Colorado.....	12	327,572	.26	
Wyoming.....	13	7,000	.01	
Michigan.....	14	3,500		
Missouri.....				
Total.....		126,493,936	100.00	
1907. <sup>3</sup>				
Oklahoma.....	1	45,933,649	27.65	
Kansas.....				
California.....	2	39,748,375	23.93	
Illinois.....	3	24,281,973	14.62	
Texas.....	4	12,322,696	7.42	
Ohio.....	5	12,207,448	7.35	
Pennsylvania.....	6	9,999,306	6.02	
West Virginia.....	7	9,095,296	5.48	
Indiana.....	8	5,128,037	3.09	
Louisiana.....	9	5,000,221	3.01	
New York.....	10	1,212,300	.73	
Kentucky.....	11	820,844	.49	
Tennessee.....				
Colorado.....	12	331,851	.20	
Utah.....	13	9,339	.01	
Wyoming.....				
Michigan.....	14	4,000		
Missouri.....				
Total.....		166,095,335	100.00	

<sup>1</sup> Griswold, W. T., Mineral Resources of the U. S. for 1906, U. S. Geol. Survey, 1907, p. 830.

<sup>2</sup> Day, D. T., Mineral Resources of the U. S. for 1907, Part II, U. S. Geol. Survey, 1908, p. 348.

ILLINOIS STATE GEOLOGICAL SURVEY.

Bull. No. 22, Plate XXVIII.

A 35,000-barrel tank fire.



Table—Continued.

State.	Rank.	Quantity.	Percentage.
1908. <sup>1</sup>			
Oklahoma.....	1	96,765	25.65
California.....	2	54,737	25.13
Illinois.....	3	86,238	18.87
Texas.....	4	66,464	6.28
Ohio.....	5	58,797	6.06
West Virginia.....	6	23,176	5.33
Pennsylvania.....	7	24,825	5.28
Louisiana.....	8	38,874	3.24
Indiana.....	9	83,629	1.84
Kansas.....	10	61,781	1.61
New York.....	11	60,128	.65
Kentucky.....	12	27,767	.41
Colorado.....	13	79,653	.21
Wyoming.....	14	17,775	.01
Utah.....	15	15,246	.01
Missouri.....			
Michigan.....			
Total.....		178,527,855	100.00
1909. <sup>1</sup>			
California.....	1	101	30.28
Oklahoma.....	2	118	26.13
Illinois.....	3	39	16.87
West Virginia.....	4	402	5.87
Ohio.....	5	98	5.80
Texas.....	6	67	5.21
Pennsylvania.....	7	108	5.06
Louisiana.....	8	31	1.67
Indiana.....	9	86	1.25
Kansas.....	10	84	.69
New York.....	11	97	.62
Kentucky.....	12	81	.35
Colorado.....	13	81	.17
Wyoming.....	14	25,806	.01
Michigan.....	15		
Missouri.....	16		
Utah.....	17		
Total.....		183,170,874	100.00
1910. <sup>1</sup>			
California.....	1	73,010,560	34.84
Oklahoma.....	2	52,028,718	24.83
Illinois.....	3	33,143,362	15.82
West Virginia.....	4	11,781,871	5.61
Ohio.....	5	9,916,370	4.73
Texas.....	6	8,869,266	4.25
Pennsylvania.....	7	8,794,662	4.20
Louisiana.....	8	6,841,395	3.26
Indiana.....	9	2,159,725	1.03
Kansas.....	10	1,128,668	.54
New York.....	11	1,063,838	.50
Kentucky.....	12	468,774	.22
Colorado.....	13	239,794	.12
Wyoming.....	14	119,045	.05
Utah.....	15		
Michigan.....	16		
Missouri.....	17		
Total.....		209,556,048	100.00
1911. <sup>2</sup>			
California.....	1	81,134,391	36.80
Oklahoma.....	2	56,069,637	25.44
Illinois.....	3	31,817,038	4.21
Louisiana.....	4	10,720,420	4.86
West Virginia.....	5	9,795,464	4.44
Texas.....	6	9,526,474	4.33
Ohio.....	7	8,817,112	4.01

<sup>1</sup> Day, D. T., Mineral Resources of the U. S. for 1909, Part II, U. S. Geol. Survey, 1911, p. 304.<sup>2</sup> Day, D. T., Mineral Resources of the U. S. for 1910, Part II, U. S. Geol. Survey, 1911, p. 329.<sup>3</sup> Day, D. T., Mineral Resources of the U. S. for 1911, advance chapter, 1912, U. S. Geol. Survey, p. 10.



The tank after the fire.

OF THE

QUANTITY

4,300  
1,000  
1,500  
500  
400  
200

100

100

100

100

Table—Concluded.

State.	Rank.	Quantity.	Percentage.
1911.			
Pennsylvania.....	8	8,248,158	3.74
Indiana.....	9	1,695,289	.77
Kansas.....	10	1,278,819	.58
New York.....	11	952,515	.43
Kentucky.....	12	472,458	.22
Colorado.....	13	226,926	.10
Wyoming.....	14	194,690	.09
Missouri.....	15		
Utah.....	16		
Michigan.....	17		
Total.....		220,449,391	100.00

Rank of petroleum-producing States, with value of production and percentage of each, from 1905-1191.

State.	Rank.	Value.	Percentage.
1905. <sup>1</sup>			
Ohio.....	1	\$17,054,877	20.27
West Virginia.....	2	16,132,631	19.17
Pennsylvania.....	3	14,653,278	17.41
Indiana.....	4	9,404,909	11.18
California.....	5	8,201,846	9.74
Texas.....	6	7,552,262	8.97
Kansas.....	7	6,546,398	7.78
Indian Territory.....			
Oklahoma.....			
Louisiana.....	8	1,601,325	1.90
New York.....	9	1,557,630	1.85
Kentucky.....	10	943,211	1.12
Tennessee.....			
Colorado.....	11	337,606	.40
Illinois.....	12	116,561	.14
Wyoming.....	13	54,865	.07
Michigan.....			
Missouri.....			
Total.....		\$84,157,399	100.00
1906. <sup>1</sup>			
Ohio.....	1	\$16,997,000	18.39
Pennsylvania.....	2	16,596,943	17.95
West Virginia.....	3	16,170,293	17.49
Kansas.....	4	9,615,198	10.40
Indian Territory.....			
Oklahoma.....			
California.....	5	9,553,430	10.34
Indiana.....	6	6,770,066	7.32
Texas.....	7	6,565,578	7.10
Louisiana.....	8	3,557,838	3.85
Illinois.....	9	3,274,818	3.54
New York.....	10	1,995,377	2.16
Kentucky.....	11	1,031,629	1.12
Tennessee.....			
Colorado.....	12	262,675	.28
Wyoming.....	13	53,890	.06
Michigan.....			
Missouri.....			
Total.....		\$92,444,735	100.00
1907. <sup>2</sup>			
Oklahoma.....	1	\$18,478,658	15.38
Kansas.....			
Pennsylvania.....			
	2	17,579,706	14.64

<sup>1</sup> Griswold, W. T., Mineral Resources of the U. S., 1906, U. S. Geol. Survey, 1907, p. 830.  
<sup>2</sup> Day, D. T., Mineral Resources of the U. S. 1907, Part II, U. S. Geol. Survey, 1908, p. 349.

The tank after the fire.





## ILLINOIS STATE GEOLOGICAL SURVEY.

**Bull. No. 22, Plate XXX.**

二、主要问题：

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Figure 1

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吳海英

Phosphate

Fig. 2

Table—Concluded.

State.	Rank.	Value.	Percentage.
1910.			
New York.....	10	\$1,414,688	1.11
Kansas.....	11	444,763	.35
Kentucky.....	12	324,684	.25
Colorado.....	13	243,402	.20
Wyoming.....	14	98,330	.08
Utah.....	15		
Michigan.....	16		
Missouri.....	17		
Total.....		\$127,896,328	100.00
1911. <sup>1</sup>			
California.....	1	\$38,719,080	28.89
Oklahoma.....	2	26,451,767	19.73
Illinois.....	3	19,734,339	14.72
West Virginia.....	4	12,767,293	9.52
Pennsylvania.....	5	10,894,074	8.13
Ohio.....	6	9,479,542	7.07
Texas.....	7	6,554,552	4.89
Louisiana.....	8	5,668,814	4.23
New York.....	9	1,248,950	.93
Indiana.....	10	1,228,835	.92
Kansas.....	11	608,756	.45
Kentucky.....	12	328,614	.25
Colorado.....	13	228,104	.17
Wyoming.....	14	132,032	.10
Utah.....	15		
Missouri.....	16		
Michigan.....	17		
Total.....		\$134,044,752	100.00

The total production in Illinois, by months, for the last six years is given in the following table:<sup>2</sup>

Production of petroleum in Illinois, 1905-1911, by months, in bbls.

Month.	Year.						
	1905.	1906.	1907.	1908.	1909.	1910.	1911. <sup>3</sup>
January.....		55,680	781,812	2,703,973	2,668,607	2,640,303	2,578,579
February.....		65,208	956,399	2,572,115	2,510,548	2,353,684	2,373,229
March.....		19,352	1,547,323	2,825,491	2,757,794	2,865,055	2,790,515
April.....		102,862	1,874,465	3,249,690	2,562,215	2,776,800	2,560,963
May.....		267,746	2,138,918	3,223,515	2,829,277	2,860,760	2,731,965
June.....	6,521	410,655	1,879,362	3,081,848	2,670,549	2,746,620	2,634,521
July.....	17,306	610,401	2,422,192	2,693,288	2,728,857	3,029,787	2,740,654
August.....	23,827	778,464	2,446,042	2,808,667	2,719,958	3,007,151	2,770,946
September.....	26,586	722,168	2,605,663	2,675,385	1,902,197	2,850,119	2,615,120
October.....	27,589	463,819	2,863,812	2,709,913	2,560,072	2,768,750	2,638,927
November.....	34,611	350,985	2,510,146	2,479,926	2,497,847	2,629,132	2,400,670
December.....	44,644	549,710	2,255,839	2,662,427	2,490,418	2,615,201	2,480,949
Total.....	181,084	4,397,050	24,281,973	33,686,238	30,898,339	33,143,362	31,317,038

The following table shows the value of Illinois oil produced from 1905-1911:

<sup>1</sup> Day, D. T., Mineral Resources of the U. S., 1911, advance chapter, U. S. Geol. Survey, 1912, p. 10.  
<sup>2</sup> Mineral resources of the U. S. for 1910, Part II, U. S. Geol. Survey, 1911, p. 385.  
<sup>3</sup> Day, D. T., Mineral Resources of the U. S. for 1911, advance chapter, 1912, U. S. Geol. Survey, p. 64.



A supply yard in Bridgeport.



*Production and value of petroleum in Illinois, 1905-1911, in bbls.*

Year.	Production.			Total value.
	Ohio Oil Co.	Other lines.	Total quantity.	
1905.....	156,503	24,581	181,084	\$ 116,561
1906.....	4,385,471	11,579	4,397,050	3,274,818
1907.....	23,733,790	548,183	24,281,973	16,432,947
1908.....	31,972,634	1,713,604	33,686,238	22,649,561
1909.....	27,640,773	3,257,666	30,898,439	19,788,864
1910.....	27,751,090	5,392,272	33,143,362	19,669,383
1911.....	25,987,480	5,329,558	31,317,038	19,734,339
Total.....			187,905,084	\$101,666,473

The following table presents kind and amount of petroleum produced in Illinois from 1909 to 1911, in barrels:<sup>1</sup>

Year.	Light.	Heavy.	Total.
1909.....	28,049,468	2,848,871	30,898,339
1910.....	30,444,279	2,692,083	33,143,362
1911.....	29,103,220	2,213,818	31,317,038

The following table shows the pipe-line runs of the Ohio Oil Company in Illinois from 1905-1911, by months, in barrels:

*Pipe-line runs.<sup>2</sup>*

Month.	1905.	1906.	1907.	1908.	1909.	1910.	1911. <sup>3</sup>
January.....		55,680	71	2,559	2,02	2,42	2,137,674
February.....		65,208	30	2,14	2,08	1,37	1,968,429
March.....		19,352	98	2,11	2,02	1,12	2,349,206
April.....		192,862	25	3,17	2,06	2,36	2,138,600
May.....		267,746	95	3,16	2,13	2,34	2,264,925
June.....		410,635	34	2,96	2,56	2,01	2,177,280
July.....		9,206	81	2,77	2,18	2,30	2,265,374
August.....		610,401	85	2,91	2,83	2,32	2,312,673
September.....		15,082	93	2,91	1,34	2,32	2,134,696
October.....		19,592	32	2,91	2,89	2,59	2,172,487
November.....		26,444	81	2,86	2,72	2,86	1,977,073
December.....		34,766	65	2,05	2,37	2,59	2,068,694
Total.....	156,503	4,385,471	23,733,790	31,972,634	27,640,773	27,751,090	25,987,480

The table below gives the gross stocks held by the Ohio Oil Company, and the eastern lines operating in Illinois from 1907 to 1911, by months, in barrels:

<sup>1</sup> Loc. cit.<sup>2</sup> Day, D. T., Mineral Resources of the U. S., 1910, Part II, U. S. Geol. Survey, 1911, p. 385.<sup>3</sup> Mineral Resources of the U. S., 1911, advance chapter, 1912, U. S. Geol. Survey, p. 65.

Stocks of the Ohio Oil Company and Eastern lines in Illinois, 1907-1911, by months, in bbls.

Months.	Gross stocks.										
	1907.		1908.		1909.		1910.		1911.		
	Ohio Oil Co. <sup>1</sup>	Ohio Oil Co. <sup>1</sup>	Eastern lines. <sup>2</sup>	Ohio Oil Co. <sup>1</sup>	Eastern lines. <sup>2</sup>	Ohio Oil Co. <sup>1</sup>	Eastern lines. <sup>2</sup>	Ohio Oil Co. <sup>1</sup>	Eastern lines. <sup>2</sup>	Ohio Oil Co. <sup>1</sup>	Eastern lines. <sup>2</sup>
January.....	2,509,598	14,129,954	.....	25,876,529	3,325,613	28,355,182	3,340,116	26,243,015	3,860,578		
February.....	3,040,111	15,069,278	2,086,609	26,203,238	3,389,803	28,356,243	3,138,018	25,635,245	3,998,278		
March.....	4,117,635	15,975,633	2,919,608	26,630,509	3,726,418	28,373,855	3,637,610	23,997,496	3,941,079		
April.....	5,528,759	17,420,534	3,189,075	26,856,675	3,590,142	28,593,365	3,210,907	24,005,010	3,141,490		
May.....	7,117,033	19,077,020	2,912,737	27,593,494	2,894,212	29,026,647	3,148,509	24,129,388	3,193,449		
June.....	8,448,344	20,456,387	3,049,094	27,899,220	2,922,182	29,106,098	3,724,919	23,195,749	3,744,088		
July.....	9,387,999	21,036,143	3,452,404	27,627,086	3,408,835	29,198,965	4,187,362	22,714,183	4,076,403		
August.....	10,355,000	22,267,197	3,203,173	27,683,334	4,071,808	29,177,382	4,141,713	22,265,928	3,996,160		
September.....	12,557,522	23,485,690	2,726,598	28,399,427	3,646,595	28,879,676	4,066,122	21,904,719	3,558,641		
October.....	13,724,691	24,396,787	2,852,588	28,535,636	2,913,877	28,492,136	3,455,197	21,359,482	2,444,909		
November.....	14,275,036	24,905,168	3,297,260	28,373,985	2,854,051	28,086,619	2,996,608	20,211,934	2,657,620		
December.....	15,571,305	25,252,468	3,572,263	28,671,543	3,351,947	27,348,358	3,240,387	19,131,678	.....		

<sup>1</sup> Day, D. T., Mineral Resources of the U. S. for 1910, Part II, U. S. Geol. Survey, 1911, p. 386.

<sup>2</sup> Compiled from files of the Oil City Derrick.

A.

B.

- A. A gas well.
- B. A gas well with a water retainer





The following table shows the quantity of petroleum shipped by rail-road from the Illinois oil fields, 1906 to 1911, by months. The amounts were estimated by Dr. D. T. Day of the U. S. Geological Survey, on the basis of 7.16 pounds to the gallon in 1906, and from 296.476 to 321.17 pounds to the barrel in 1907 to 1911:

*Rail shipments of oil from Illinois, 1906-1911, by months.*

Month.	1906. <sup>1</sup>	1907. <sup>2</sup>	1908. <sup>3</sup>	1909. <sup>4</sup>	1910. <sup>5</sup>	1911. <sup>6</sup>
January.....	60,134	8,701	91,807	144,511	220,856	228,404
February.....	51,358	14,598	71,170	111,407	217,917	224,856
March.....	16,009	23,947	132,300	152,056	263,056	254,927
April.....	35,539	42,249	118,074	109,872	257,292	347,530
May.....	160,121	158,227	84,290	157,783	283,285	333,824
June.....	358,039	166,644	122,317	183,432	285,096	329,621
July.....	515,956	322,622	107,688	158,642	276,533	311,681
August.....	534,821	223,134	70,171	166,943	277,317	297,784
September.....	368,625	70,555	83,042	173,509	253,788	238,917
October.....	162,547	56,570	102,163	200,067	213,217	292,004
November.....	48,747	56,080	138,147	198,044	287,750	263,627
December.....	30,843	66,692	126,967	185,166	234,819	285,082
Total.....	2,342,739	1,210,019	1,248,136	1,941,432	3,070,925	3,407,757

<sup>1</sup> Shipments were made from loading racks at Bridgeport, Oilfield and Stoy. The railroads were the Vandalia; the Baltimore & Ohio; the Cincinnati, Hamilton & Dayton; and the Indianapolis Southern.  
<sup>2</sup> Shipments were made from loading racks at Duncansville, Lawrenceville, Stoy, Robinson, Bridgeport, Oilfield and Casey. The railroads were the Vandalia; the Baltimore & Ohio; the Cincinnati, Hamilton & Dayton; the Indianapolis Southern and the Cleveland, Cincinnati, Chicago & St. Louis.  
<sup>3</sup> Shipments were made from Duncansville, Lawrenceville, Stoy, Robinson, Bridgeport, Sparta and Casey. The railroads were the Vandalia; the Baltimore & Ohio; the Illinois Southern; the Indianapolis Southern; and the Cleveland, Cincinnati, Chicago & St. Louis.  
<sup>4</sup> Shipments were made from Duncansville, Flat Rock, Lawrenceville, Stoy, Robinson, Bridgeport, Casey, and Sparta, the same railroads shipping in 1909 as in 1908. The number of tank cars shipped in 1909 was 11,820.  
<sup>5</sup> Shipments were made from Duncansville, Flat Rock, Lawrenceville, Stoy, Sandoval, Bridgeport, Casey and Sparta, the same railroads shipping in 1910 as in 1908 and 1909. The number of tank cars shipped in 1910 was 17,049.

The following table gives the statistics of field operations since 1905:

Number of wells completed and the total and average initial petroleum of new wells in Illinois, 1906-1911, by counties.<sup>1</sup>

County.	Completed.					Productive.					Dry.							
	1906.	1907.	1908.	1909.	1910.	1911. <sup>2</sup>	1906.	1907.	1908.	1909.	1910.	1911. <sup>2</sup>	1906.	1907.	1908.	1909.	1910.	1911. <sup>2</sup>
Bond.....	1,337	1,176	385	181	7	10	1,173	975	298	134	1	41	164	201	87	47	6	10
Clark.....	65	56	9	12	5	2	51	45	8	9	4	2	14	11	1	3	32	27
Clinton.....	1,060	2,840	2,322	2,093	1,210	481	896	2,464	1,986	1,738	950	369	164	376	336	355	260	49
Coles.....	558	152	42	33	17	14	505	139	31	23	13	7	53	13	11	10	4	112
Crawford.....	37	25	9	6	2	1	21	11	7	2	.....	.....	16	14	2	4	2	1
Cumberland.....	.....	.....	.....	3	2	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	2	2	.....
Edgar.....	.....	.....	.....	18	8	5	.....	.....	.....	7	4	3	.....	.....	.....	11	4	2
Jackson.....	.....	.....	.....	724	669	523	143	621	684	668	584	466	33	70	78	56	95	57
Jasper.....	176	691	762	9	2	2	.....	.....	.....	1	.....	.....	.....	.....	.....	8	2	.....
Lawrence.....	.....	.....	.....	2	1	1	.....	.....	.....	1	.....	.....	.....	.....	.....	1	1	.....
Macoupin.....	.....	.....	.....	23	60	55	.....	.....	.....	6	34	44	.....	.....	.....	17	26	11
Madison.....	.....	.....	.....	12	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	10	.....	.....
Marion.....	.....	.....	.....	2	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	1	.....
Randolph.....	.....	.....	.....	33	33	30	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Saline.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Miscellaneous..	50	48	45	33	33	30	4	5	5	.....	1	2	46	43	40	33	32	28
Total.....	3,283	4,988	3,574	3,151	2,139	1,364	2,793	4,280	3,019	2,593	1,671	1,057	490	728	555	558	2468	3905

<sup>1</sup> Day, D. T., Mineral Resources of the U. S. for 1910, Part II, U. S. Geol. Survey, 1911, pp. 387-388.

<sup>2</sup> Compiled from files of Oil City Derrick.

<sup>3</sup> Includes 75 gas wells.

<sup>4</sup> Includes 41 gas wells.

Number of Wells Completed—1906-1911—Concluded.

County.	Total initial production.						Average initial production per well.					
	1906.	1907.	1908.	1909.	1910.	1911. <sup>1</sup>	1906.	1907.	1908.	1909.	1910.	1911.
Bond.....					25						25.0	
Clark.....	31,060	20,385	6,953	3,219	1,802	811	26.5	20.9	23.3	24.0	22.8	19.7
Clinton.....						11,681						94.9
Coles.....	279	314	122	95	65	10	5.5	7.0	15.3	10.6	16.2	5.0
Crawford.....	59,204	84,163	46,694	44,379	26,382	9,802	66.1	34.2	23.5	25.5	27.8	26.5
Cumberland.....	15,115	3,612	303	558	162	125	29.9	26.0	9.8	24.3	12.4	17.8
Edgar.....	101	118	45	10			4.8	10.7	6.4	5.0		
Jackson.....				3						3.0		
Jasper.....				50	40	20				7.1	10.0	6.6
Lawrence.....	7,230	30,543	24,793	41,056	61,015	40,432	50.6	49.2	36.2	61.5	102.7	86.7
Macoupin.....				5		7				5.0		
Madison.....				10						10.0		
Marion.....				223	3,760	4,025				37.2	110.6	91.4
Randolph.....				145						72.5		
Saline.....				3						3.0		
Miscellaneous.....	23	28	50		5	6	5.8	5.6	10.0		5.0	3.0
Total.....	113,012	139,163	78,960	89,756	93,256	66,919	40.5	32.7	26.2	34.6	55.5	63.3

<sup>1</sup> Compiled from files of Oil City Derrick.

Number of wells completed in Illinois, 1906-1911, by months.<sup>1</sup>

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1906.....	.....	.....	.....	108	253	359	435	496	449	453	376	354	3,283
1907.....	253	356	351	387	493	639	521	461	400	363	430	334	4,988
1908.....	303	157	187	197	264	390	474	417	344	290	273	278	3,574
1909.....	213	224	216	203	321	342	346	303	282	242	223	176	3,151
1910.....	111	158	128	157	192	211	172	235	234	198	177	166	2,139
1911.....	104	89	71	81	117	147	127	146	138	107	129	108	1,364

<sup>1</sup> Day, D. T., Mineral Resources of the U. S. in 1910, Part II, U. S. Geol. Survey, 1911, p. 388.

Number of dry holes drilled in Illinois, 1906-1911, by months.<sup>1</sup>

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1906.....	.....	.....	.....	20	37	41	69	82	69	47	64	61	490
1907.....	41	55	60	40	64	75	72	45	62	82	80	52	728
1908.....	55	22	37	33	35	54	65	55	49	51	47	52	555
1909.....	41	47	45	38	45	53	50	57	50	48	52	32	558
1910.....	17	43	29	41	43	50	43	47	48	30	39	38	468
1911.....	22	25	15	16	33	43	26	27	38	17	25	18	305

<sup>1</sup> Day, D. T., Mineral Resources of the U. S. for 1910, Part II, U. S. Geol. Survey, 1911, p. 388.

<sup>2</sup> Includes 75 gas wells.

<sup>3</sup> Includes 41 gas wells.

Total initial daily production of new wells in Illinois, 1906-1911, by months, in barrels.<sup>1</sup>

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1906.....	.....	.....	.....	3,736	8,137	17,148	15,262	22,432	9,705	14,039	10,611	11,942	113,012
1907.....	9,433	9,842	10,392	11,083	13,329	18,807	17,375	11,240	10,967	8,157	9,780	8,758	139,163
1908.....	6,144	3,329	4,133	4,285	6,628	9,856	9,475	8,322	7,848	6,091	6,242	6,607	78,960
1909.....	5,060	4,833	5,018	5,237	7,681	9,050	9,820	8,661	8,324	8,904	9,628	7,540	89,756
1910.....	5,331	6,840	5,563	7,460	8,091	9,267	6,386	10,042	8,419	10,133	8,832	7,062	93,256
1911.....	5,677	3,512	3,909	5,587	5,132	5,850	9,058	7,578	6,576	4,782	5,826	3,432	66,919

<sup>1</sup> Loc. cit.

*Petroleum field report in 1910, by counties.*

County.	Wells.			Acreage.		
	Productive, Dec. 31.	Abandoned	Drilling, Dec. 31.	Fee.	Lease.	Total.
Clark.....	2,341	124	.....	1,065	58,515	59,580
Coles.....	67	1	.....	140	575	715
Crawford.....	6,652	217	15	913	102,737	103,650
Cumberland.....	677	4	.....	.....	6,221	6,221
Edgar.....	6	1	.....	530	80	610
Jersey.....	.....	.....	.....	.....	.....	.....
Lawrence.....	2,411	38	30	329	80,615	80,944
Macoupin.....	.....	.....	1	.....	23,793	23,793
Madison.....	.....	.....	.....	.....	11,486	11,486
Marion.....	12	.....	4	407	35,920	35,920
Randolph.....	5	.....	.....	.....	493	900
Miscellaneous (undevel'd).....	.....	.....	.....	.....	84,760	84,760
Total.....	12,171	385	50	3,384	405,195	408,579

On January 1, 1912, it was estimated that 19,982 wells had been drilled in Illinois. Of these 3,152 or 15.7 per cent were barren. There were 84 wells abandoned in 1910 and 198 in 1911. The abandonment of wells in the shallow fields has been under way since 1909 and is gradually growing as the sands are exhausted. Unless new wells from deeper pay sands or the extension of portions of the area are developed this field will probably be completely abandoned by the close of 1913. The deeper field of Crawford county is showing a decline, but its life will be much longer.

## NATURAL GAS IN ILLINOIS.

Illinois produces a very small amount of natural gas in proportion to the immense quantities of petroleum. Her rank is eighth among gas producing states with the following preceding her in order: 1, West Virginia; 2, Pennsylvania; 3, Ohio; 4, Kansas; 5, Oklahoma; 6, New York; 7, Indiana. The principal gas areas lie within the oil fields and the supply is used, chiefly, for field operations. Gas is used for domestic purposes in the towns within the oil belt and in several others near the fields. Gas is sold in Lawrenceville, Bridgeport, Pinkstaff, Birds, Flat Rock, Oblong, Palestine, Robinson, New Hebron, Porterville, Stoy, Hutsonville, Annapolis, Casey, Westfield and Martinsville, all being in or near the oil fields. Outside towns, such as Marshall, Vincennes, Indiana, Olney, and Sumner, are connected by direct mains with the fields. The majority of active oil wells produce small amounts of gas, which is collected in gas tanks on each lease. There are, however, several areas within the fields that yield high pressure gas wells, and these serve the commercial demand for the fuel. (See Pl. XXXI.) Such areas lie near Bellair, Hardinville in Honey Creek township, and north of Bridgeport. The gas comes, seemingly, in each case, from raised portions of the oil horizon. The following brief table shows the approximate depths of gas sands and the accompanying pressures:

Record of consumption of natural gas from Illinois, 1908 to 1910.

Year.	Num-ber of pro-ducers having gas wells.	Gas consumed.										
		Consumers.		Domestic.			Industrial.			Total.		
				Domestic.	Indus-trial	Value.	Cents per M cu. ft.	Quan-tity M cu. ft.	Cents per M cu. ft.			
		Domestic.	Indus-trial							Value.	Cents per M cu. ft.	Quan-tity M cu. ft.
1908.....	185	7,377	204	\$194,859	18.5	3,928,627	6.4	\$251,218	4,978,879	8.96	\$446,077	
1909.....	194	8,458	518	248,318	19.5	7,202,439	5.5	396,083	8,472,860	7.61	644,401	
1910.....	207	10,109	479	278,377	21.9	5,457,229	6.1	335,265	6,723,286	9.13	613,642	

APPENDIX—TABLES OF WELL DATA.

INDEX TO TABLES.

	Pages	
	From	To
Crawford county .....	186	283
Honey Creek township .....	186	196
Martin township .....	197	238
Oblong township .....	239	277
Robinson township .....	277	283
Lawrence county .....	283	436
Bridgeport township .....	283	331
Christy township .....	331	332
Dennison township .....	332	364
Lawrence township .....	364	380
Lukin township .....		381
Petty township .....	382	436



## Crawford County—Honey Creek Township.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
2—N. W.	1	Unknown.	Wesley, No. 1.	528							Dry	No record.
3—N. E. S. W.	1	Shaffer.	Parker, No. 1.	605		952		372	1,128	1,000	Gas	do.
	1	Harrington & Co.	Goff, No. 1.	590		790		210	1,290		Dry	Salt water, 970 feet.
S. E.	1	Shaffer.	Wesley, No. 1.	580		832		252	1,248			Gas, 790 feet, 250 pounds pressure.
								400	1,100			Gas, 832 feet, 250 pounds pressure.
5—N. W.	2	Murphy.	Maxwell, No. 1.	541		830	80	289	1,211	850	Gas	Gas, 980 feet, 400 pounds pressure.
	1	Riddle.	Mann, No. 14.	464		910	19	446	1,054			Gas, 830 feet.
	2	Riddle.	Mann, No. 13.	473		870	5	397	1,103		100	
	3	Red Bank.	Allison, No. 1.	477		919	10	446	1,054		50	
	4	Shaffer.	Price, No. 1.	477		925	35	448	1,052		Light	Gas, 930 feet.
	5	Shaffer.	Price, No. 4.	482		923	21	446	1,054	931	Dry	
	6	Shaffer.	Price, No. 2.	472		923	5	441	1,059	970		Well abandoned.
	7	Shaffer.	Price, No. 5.	492		915	5	443	1,057	950		No record.
S. E.	8	Shaffer.	Price, No. 3.	486				419	1,081	1,000	Dry	
	1	Whitehall & Fritz.	Moore, No. 1.	536		928		392	1,108	915	Gas	Gas, 932 feet.
6—N. E.	2	Pease.	Smith, No. 1.	511		1,010		499	1,001		Dry	Salt water.
	1	Riddle.	Mann, No. 12.	460		844		384	1,116	850		Gas, 844 feet.
	2	Riddle.	Mann, No. 11.	476		896	17	426	1,074		300	
	3	Red Bank.	Allison, No. 2.	478		897	37	448	1,052		Light	
							15	371	1,129	847	200	
							6	401	1,099		Dry	

4	Riddle	Mann, No. 1	461	do.	856	12	395	1,105					Gas sand
5	Riddle	Mann, No. 3	460	Robinson-2	895	30	434	1,066		1,600			
6	Riddle	Mann, No. 4	459	Robinson-1	873	34	413	1,087		*150			Quit in sand
7	Riddle	Mann, No. 5	467	do.	844	16	385	1,115					
8	Riddle	Mann, No. 2	460	Robinson-2	886	23	427	1,073		150			
9	Riddle	Mann, No. 8	458	do.	885	20	418	1,082		200			
				do.	888	36	428	1,072		1,200			Hard lime from 1,400 to 1,663 feet
				do.	892	27	434	1,066					Hole full of salt water
10	Riddle	Mann, No. 17	458	Stray	1,344	19	886	614		1,663			
				Robinson-2	842	10	384	1,116					
11	Treat, Crawford & Treat	Boyd, No. 6	477	Robinson-1	885	51	427	1,073	913				
12	Treat, Crawford & Treat	Boyd, No. 7	477	do.	883	5	408	1,094					
13	Treat, Crawford & Treat	Boyd, No. 3	481	Stray	1,020		543	957					Salt water
14	Treat, Crawford & Treat	Boyd, No. 2	476	Robinson-2	908		373	1,127					
15	Treat, Crawford & Treat	Boyd, No. 1	477	Robinson-3	970		427	1,073	908				
16	Ohio	Kent, No. 2	471	Stray	880		489	1,011	970				
17	Ohio	Kent, No. 4	471	Robinson-1	885		384	1,116					
18	Ohio	Kent, No. 1	484	do.	915	40	409	1,091		100			
19	Ohio	Kent, No. 3	480	Stray	885	45	408	1,092	900				
20	Ohio	Kent, No. 5	478	Robinson-2	855		384	1,116	865				Gas, 860 feet
21	Ohio	Kent, No. 6	471	Stray	875	23	413	1,087	885				Gas, 885 feet
22	Ohio	Kent, No. 7	470	Robinson-1	859	23	441	1,059	930				Gas, 930 feet
23	Ohio	Kent, No. 8	476	Robinson-2	872		405	1,085					Gas, 888 feet
24	Ohio	Kent, No. 9	479	Stray	858	20	435	1,065	915				
1	Riddle	Mann, No. 18	456	Robinson-1	884	19	382	1,118	865				
2	Riddle	Mann, No. 16	466	Robinson-2	867	11	406	1,092					
3	Riddle	Mann, No. 19	454	do.	830	38	388	1,112	869				Gas, 867 feet
4	Riddle	Mann, No. 6	463	Robinson-3	848	20	374	1,126					
5	Riddle	Mann, No. 7	469	Robinson-2	913	44	382	1,118	855				
				Robinson-1	853	16	447	1,053					
				do.	832	30	399	1,101	862				No. 2 lens absent
					834	16	369	1,131	838				Gas, 841 feet. Well abandoned
6	Hazelwood	Richart, No. 1	458	do.	822	22	364	1,136					
7	Hazelwood	Richart, No. 2	460	Robinson-3	887	10	429	1,071					
				Robinson-4	952	3	492	1,008					Salt water, 952 feet. No upper oil sands
8	Hazelwood	Richart, No. 3	473	Robinson-2	860	11	387	1,113					
9	Hazelwood	Richart, No. 5	470	Robinson-3	903	14	430	1,070					
10	Hazelwood	Richart, No. 4	469	Robinson-1	827	17	357	1,143					No. 2 lens absent
				do.	822	16	353	1,147					
				Robinson-3	890	10	421	1,079					

N. W.

\* Barrels per hour.

## Crawford County—Honey Creek Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.				Total depth—feet.	Oil depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
6— N. W.	11	Ohio.....	G. Kersey, No. 1.....	464	Robinson-1.....	814	26	350	1, 150	820	.....	Gas, 814 feet.....
	12	Ohio.....	G. Kersey, No. 2.....	462	Robinson-3.....	885	17	421	1, 079	890	50	.....
	13	Riddle.....	Mann, No. 20.....	470	Robinson-2.....	885	11	383	1, 107	880	25	Gas, 885 feet.....
	14	Riddle.....	Mann, No. 15.....	477	Robinson-3.....	885	15	423	1, 077	890	.....	.....
	15	Riddle.....	Mann, No. 10.....	488	Robinson-1.....	835	6	365	1, 135	.....	.....	.....
	16	Riddle.....	Mann, No. 9.....	496	Robinson-2.....	835	30	415	1, 085	.....	.....	.....
S. W.	1	Ohio.....	Frost, No. 1.....	484	Robinson-1.....	1, 203	.....	719	1, 038	.....	40	Salt water.....
	2	Devonian.....	Frost, No. 1.....	481	Robinson-2.....	845	.....	364	1, 136	.....	.....	.....
	3	Devonian.....	Frost, No. 4.....	497	Robinson-3.....	920	5	439	1, 061	.....	.....	.....
	4	Devonian.....	Frost, No. 2.....	487	Robinson-1.....	945	13	464	1, 036	951	.....	Salt water, 958 feet.....
	5	Devonian.....	Frost, No. 3.....	492	Robinson-2.....	845	22	348	1, 152	.....	.....	Gas, 845 feet.....
	1	Treat, Crawford & Treat.....	Boyd, No. 8.....	483	Robinson-1.....	934	46	437	1, 063	.....	Gas	Gas, 938 feet.....
	2	Treat, Crawford & Treat.....	Boyd, No. 9.....	506	Robinson-2.....	869	12	372	1, 128	.....	Show	.....
	3	Treat, Crawford & Treat.....	Boyd, No. 5.....	494	Robinson-1.....	876	43	389	1, 111	.....	.....	.....
	4	Treat, Crawford & Treat.....	Boyd, No. 4.....	481	Robinson-2.....	857	7	365	1, 135	.....	Light	.....
	5	Ohio.....	Boyd, No. 1.....	481	Robinson-1.....	869	148	377	1, 123	1, 017	.....	.....
S. E.	1	Treat, Crawford & Treat.....	Boyd, No. 8.....	483	Robinson-1.....	863	40	380	1, 120	870	.....	.....
	2	Treat, Crawford & Treat.....	Boyd, No. 9.....	506	Robinson-1.....	864	46	370	1, 130	864	.....	Dry No sands.....
	3	Treat, Crawford & Treat.....	Boyd, No. 5.....	494	do.....	885	55	374	1, 126	864	.....	Light Well abandoned.....
	4	Treat, Crawford & Treat.....	Boyd, No. 4.....	481	do.....	845	.....	364	1, 136	.....	20	Gas, 845 feet.....
	5	Ohio.....	Boyd, No. 1.....	481	Robinson-3.....	920	.....	439	1, 061	.....	.....	Gas, 845 feet.....
	6	Ohio.....	Boyd, Hrs. No. 2.....	488	Robinson-1.....	860	15	372	1, 128	862	.....	Salt water.....
	7	Ohio.....	Boyd, Hrs. No. 3.....	482	Robinson-2.....	887	13	405	1, 095	887	25	.....



Crawford County—Honey Creek Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
15— N. E.	12	Craig & Lowrie.	R. Weger, No. 1.	581	Robinson-1.	998	35	417	1,083	1,010	1,033		Quit in sand.
	13	Craig & Lowrie.	R. Weger, No. 4.	585	do.	980	52	395	1,105	1,015	1,032		do.
	14	Shaffer.	H. Parker, No. 2.	582	Robinson-2.	1,026	37	444	1,056	1,026			Well abandoned.
	15	Shaffer.	H. Parker, No. 13.	594	Robinson-1.	1,010	33	416	1,084	1,030			
	16	Shaffer.	H. Parker, No. 11.	598	do.	1,001	18	413	1,087	1,011			
	17	Shaffer.	H. Parker, No. 10.	600	do.	1,005	20	405	1,095	1,005			
	18	Shaffer.	H. Parker, No. 12.	595	do.	995	17	400	1,100	1,000	1,012		Quit in sand.
	19	Shaffer.	H. Parker, No. 9.	591	do.	992	25	401	1,099	992			
N. W.	20	Shaffer.	H. Parker, No. 16.	585	do.	1,005	15	420	1,080	1,010	1,020		Quit in sand.
	21	Shaffer.	H. Parker, No. 22.	582	do.	974	20	392	1,108	974			
	22	Shaffer.	H. Parker, No. 25.	586	do.	994	20	408	1,092	994	1,014		Quit in sand.
	23	Shaffer.	H. Parker, No. 15.	578	do.	983	13	415	1,085	983	1,009		do.
	24	Shaffer.	H. Parker, No. 21.	577	do.	1,000	17	423	1,077	1,000			
	1	Shaffer.	H. Parker, No. 3.	561	do.	944	49	383	1,117	955	993		Quit in sand.
	2	Shaffer.	H. Parker, No. 23.	548	Robinson-2.	1,004	15	456	1,044	1,004	1,019		do.
	3	Shaffer.	H. Parker, No. 5.	574	Robinson-1.	1,000	28	426	1,074	1,000			
S. W.	4	Shaffer.	H. Parker, No. 24.	565	do.	991	18	426	1,074	991			
	5	Shaffer.	H. Parker, No. 14.	563	do.	994	28	431	1,069	994	1,022		Quit in sand.
	6	Shaffer.	H. Parker, No. 1.	568	do.	967	60	399	1,101				
	7	Shaffer.	J. Weger, No. 8.	514	do.	958	30	444	1,056	962	983		Quit in sand.
	8	Shaffer.	J. Weger, No. 11.	546	do.	977	19	431	1,069	977	996		do.
	9	Shaffer.	J. Weger, No. 9.	549	do.	984	30	435	1,065	984			Salt water, 989 feet.
	10	Shaffer.	J. Weger, No. 10.	542	do.	973	24	431	1,069	983			
	11	Shaffer.	J. Weger, No. 2.	569	do.	978	94	409	1,091	978			
S. W.	1	Shaffer.	G. Parker, No. 5.	593	do.	1,012	36	419	1,061	1,030			
	2	Shaffer.	G. Parker, No. 6.	579	do.	1,003	24	424	1,076	1,003			
	3	Shaffer.	G. Parker, No. 4.	585	do.	1,010	33	425	1,075	1,017	1,043		Quit in sand.
	4	Shaffer.	G. Parker, No. 2.	573	do.	983	39	420	1,080	983	1,032		do.
	5	Shaffer.	G. Parker, No. 3.	580	do.	1,003	36	423	1,077	1,003	1,039		do.
	6	Shaffer.	G. Parker, No. 1.	587	do.	1,006	46	419	1,081	1,006	1,052		do.
	7	Ohio.	Sequist, No. 1.	582	do.	1,008	37	426	1,074				
	8	Ohio.	Sequist, No. 2.	564	do.	985	30	421	1,079				

9 Ohio.....	Sequist, No. 3.....	Robinson-1.....	989	23	431	1,089	.....	.....	.....	Salt water.....
10 Ohio.....	Sequist, No. 4.....	do.....	990	44	416	1,064	.....	.....	.....	.....
11 Ohio.....	Sequist, No. 5.....	do.....	996	28	423	1,077	.....	.....	.....	.....
12 Red Bank.....	Johnson, No. 8.....	do.....	958	8	406	1,094	.....	.....	50	.....
13 Red Bank.....	Johnson, No. 7.....	do.....	955	.....	430	1,070	.....	.....	.....	.....
14 Red Bank.....	Johnson, No. 9.....	Robinson-2.....	988	.....	463	1,037	.....	1,011	100	Quit in sand.....
15 Red Bank.....	Johnson, No. 1.....	Robinson-1.....	976	20	436	1,064	.....	.....	50	.....
16 Red Bank.....	Johnson, No. 5.....	Stray.....	915	.....	377	1,123	.....	.....	.....	Gas, 915 feet.....
17 Red Bank.....	Johnson, No. 2.....	Robinson-1.....	961	15	423	1,077	.....	.....	.....	.....
18 Red Bank.....	Johnson, No. 4.....	do.....	985	32	437	1,063	.....	.....	200	.....
19 Red Bank.....	Johnson, No. 3.....	do.....	988	.....	421	1,079	.....	.....	50	.....
20 Shaffer.....	Ford, No. 1.....	Robinson-2.....	1,007	13	470	1,030	.....	.....	.....	.....
21 Shaffer.....	Ford, No. 2.....	Robinson-1.....	980	30	419	1,081	.....	.....	50	.....
22 Shaffer.....	Ford, No. 5.....	do.....	952	48	396	1,104	.....	.....	100	Quit in sand.....
23 Shaffer.....	Ford, No. 4.....	do.....	962	52	424	1,076	.....	.....	.....	.....
24 Shaffer.....	Ford, No. 3.....	do.....	967	49	424	1,076	.....	.....	.....	Quit in sand.....
25 Shaffer.....	Vinsel, No. 4.....	do.....	960	38	434	1,066	.....	.....	.....	.....
26 Shaffer.....	Vinsel, No. 1.....	Robinson-2.....	995	17	458	1,042	.....	.....	.....	.....
27 Shaffer.....	Vinsel, No. 2.....	Robinson-1.....	998	29	426	1,074	.....	.....	.....	.....
28 Shaffer.....	Vinsel, No. 6.....	do.....	1,001	30	424	1,076	.....	.....	.....	Quit in sand.....
29 Shaffer.....	Vinsel, No. 12.....	do.....	990	42	418	1,082	.....	1,032	.....	.....
30 Shaffer.....	Vinsel, No. 11.....	do.....	1,000	29	429	1,071	.....	.....	.....	Quit in sand.....
1 Shaffer.....	Vinsel, No. 2.....	do.....	1,009	23	431	1,089	.....	.....	.....	Quit in sand.....
2 Shaffer.....	Vinsel, No. 1.....	do.....	985	28	402	1,068	.....	.....	.....	Quit in sand.....
3 Shaffer.....	Mail, No. 1.....	do.....	985	34	397	1,103	.....	.....	.....	Quit in sand.....
4 Shaffer.....	H. Parker, No. 7.....	do.....	1,015	19	434	1,066	.....	.....	.....	Quit in sand.....
5 Shaffer.....	H. Parker, No. 20.....	do.....	1,006	35	423	1,077	.....	1,041	.....	.....
6 Shaffer.....	H. Parker, No. 19.....	do.....	995	18	438	1,062	.....	.....	.....	.....
7 Shaffer.....	H. Parker, No. 18.....	do.....	1,006	32	420	1,080	.....	.....	.....	.....
8 Shaffer.....	H. Parker, No. 17.....	do.....	984	22	430	1,070	.....	.....	.....	.....
1 Ohio.....	Darone, No. 2.....	do.....	983	22	442	1,058	.....	.....	.....	.....
2 Ohio.....	Darone, No. 1.....	do.....	990	21	415	1,085	.....	.....	.....	Quit in sand.....
1 Red Bank.....	G. Weger, No. 1.....	do.....	990	21	429	1,071	.....	.....	.....	.....
2 Pease & Co.....	Ford, No. 1.....	Robinson-3.....	994	25	440	1,080	.....	.....	.....	15 Salt water 976 feet.....
1 Shaffer.....	J. Weger, No. 7.....	Robinson-1.....	969	25	438	1,066	.....	.....	.....	150 Salt water, 986 feet.....
2 Shaffer.....	J. Weger, No. 6.....	do.....	966	21	434	1,066	.....	.....	.....	Dry.....
3 Shaffer.....	J. Weger, No. 5.....	do.....	940	22	428	1,072	.....	.....	.....	Dry.....
4 Red Bank.....	J. Goff, No. 2.....	do.....	960	.....	464	1,036	.....	.....	.....	Salt water, 1,028 feet.....
5 Red Bank.....	J. Goff, No. 1.....	Robinson-2.....	960	.....	452	1,048	.....	.....	.....	Quit in sand.....
6 Shaffer.....	J. Weger, No. 4.....	do.....	989	20	452	1,048	.....	.....	.....	Salt water, 962 feet. Well abandoned.....
7 Shaffer.....	J. Weger, No. 3.....	Robinson-1.....	980	28	448	1,052	.....	.....	.....	Well abandoned.....
8 Shaffer.....	Weger, No. 1.....	do.....	991	40	439	1,061	.....	.....	.....	.....
9 Ohio.....	G. Parker, No. 1.....	do.....	999	.....	447	1,053	.....	.....	.....	.....
10 Ohio.....	G. Parker, No. 5.....	do.....	985	23	441	1,059	.....	.....	.....	100.....
11 Ohio.....	G. Parker, No. 4.....	do.....	973	.....	445	1,055	.....	.....	.....	50 Salt water, 1,004 feet.....
12 Ohio.....	G. Parker, No. 2.....	do.....	978	5	430	1,070	.....	.....	.....	40 Salt water, 995 feet.....
			987	36	439	1,061	.....	.....	.....	.....

S. E.....

16—

N. E.....

S. W.....

S. E.....

## Crawford County—Honey Creek Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
16—S. E...	13	Ohio.....	G. Parker, No. 3.....	538	Robinson-2.....	1,001	27	463	1,037	1,001	40	Salt water, 1,028 feet.....
	14	Ohio.....	G. Parker, No. 6.....	530	..do.....	998	5	458	1,042	998	10	Salt water, 1,003 feet.....
	15	Ohio.....	A. Goff, No. 3.....	516	..do.....	961	23	445	1,055	965	40	Salt water, 984 feet.....
	16	Ohio.....	A. Goff, No. 1.....	516	..do.....	966	29	450	1,050	968	50	Salt water, 995 feet.....
	17	Ohio.....	A. Goff, No. 2.....	490	Robinson-1.....	931	.....	441	1,059	931	30	Salt water, 965 feet.....
17—N. E...	1	Red Bank.....	Jewel, No. 1.....	466	Robinson-3.....	958	.....	492	1,008	.....	Dry	Salt water, 975 feet.....
18—N. W...	1	Ohio.....	Baker, No. 1.....	467	.....	1,080	9	613	887	.....	Dry	Salt water, 1,080 feet.....
	2	Ohio.....	Mann, No. 1.....	435	.....	.....	.....	.....	.....	1,420	Dry	No sands.....
19 (N)—S. W...	1	Red Bank.....	Maxwell, No. 1.....	475 {	Stray.....	800	10	325	1,175	.....	Gas	T. 6 N., R. 12 W.....
	2	Red Bank.....	Garrard, No. 2.....	487	..do.....	830	15	355	1,145	830	10	Gas well.....
	1	Red Bank.....	Garrard, No. 1.....	480	Robinson-1.....	860	51	373	1,127	.....	Gas	1,000,000 cu. feet gas daily
					Robinson-3.....	951	20	471	1,029	.....	Gas	2,000,000 cubic feet gas daily.....
20 (S)—N. E...	1	Ohio.....	Stephenson, No. 1.....	438	Robinson-2.....	891	82	453	1,047	.....	Dry	Salt water, 943 feet. T. 5 N., R. 12 W.....
	1	Ohio.....	Darnold, No. 1.....	455	.....	1,028	.....	573	927	.....	Dry	Salt water, 1,028 feet.....
	1	Ohio.....	Eagleton, No. 1.....	506	Stray.....	890	8	384	1,116	.....	Gas	Gas, 892 feet.....
20 (N)—S. W...	2	Ohio.....	P. Frost, No. 1.....	497 {	Stray.....	925	20	428	1,072	.....	T. 6 N., R. 12 W.....	
	1	Ohio.....	Rodrick, No. 1.....	480	Robinson-3.....	975	.....	478	1,022	.....	Gas	Gas, 976 feet.....
					Robinson-3.....	952	18	472	1,028	1,227	Dry	Salt water, 970 feet.....
21—N. E...	1	Ohio.....	G. Parker, No. 6.....	534	Robinson-1.....	982	.....	448	1,052	987	25	Salt water, 1,002 feet, T. 5 N., R. 12 W.....
22—N. E...	1	Ohio.....	Mann, No. 1.....	572	.....	.....	.....	.....	.....	.....	Dry	No sands. Salt water, 1,065 feet.....
	1	Murphy.....	T. Parker, No. 3.....	544	Robinson-1.....	986	.....	442	1,058	998	Dry	Salt water, 998 feet.....

28- N. E.	2 Murphy.....	T. Parker, No. 2.....	537	Robinson-1.....	975	201	498	1,052	900	900
29- N. W.	3 Murphy.....	T. Parker, No. 1.....	553	Robinson-2.....	932	26	437	1,033	1,003	1,003
	4 Red Bank.....	Johnson, No. 6.....	526	Robinson-1.....	956		529	1,071	900	
	1 Unknown.....	Wat, No. 1.....	560							
	1 Red Bank.....	J. Frost, No. 1.....	467	Stray.....	893	18	426	1,074		
	2 Crescent.....	M. Frost, No. 1.....	461	Robinson-3.....	950	10	483	1,017		
S. W.	1 Ohio.....	Davis, No. 2.....	465	Robinson-2.....	921	15	480	1,083		
	2 Ohio.....	Davis, No. 1.....	495	Robinson-2.....	915	15	480	1,030	921	
S. E.	1 Shafter.....	Reineck, No. 3.....	485	Robinson-2.....	1,030	10	565	935		
	2 Shafter.....	Reineck, No. 2.....	518		921	12	426	1,874	924	
	3 Shafter.....	Reineck, No. 1.....	529		942		447	1,053		
30- N. E.	1 Ohio.....	A. Frost, No. 1.....	492	Robinson-4.....	921	24	403	1,097		
	2 Crescent.....	M. Frost, No. 1.....	480	Robinson-2.....	921	110	392	1,106		
N. W.	1 Ohio.....	Purell, No. 1.....	465	Robinson-2.....	1,010	6	528	972		
	2 Associated Producers.....	Van Winkle, No. 1.....	460	Robinson-3.....	873	29	398	1,107	878	
	3 Associated Producers.....	Van Winkle, No. 2.....	462	Robinson-2.....	920	11	460	1,080	938	
	1 Red Bank.....	Sears, No. 1.....	466	Robinson-1.....	870	78	465	1,095		
S. E.				Robinson-2.....	956	74	491	1,008		
				Robinson-3.....	900	67	440	1,080	925	
				Robinson-2.....	810	47	334	1,196	863	
				Robinson-1.....	921	10	439	1,061		
				Robinson-2.....	870		394	1,116		
				Robinson-3.....	939	6	447	1,063		
31- N. E.	1 Ohio.....	Clark, No. 6.....	466	Robinson-2.....	905		439	1,061	923	
	2 Red Bank.....	Miller, No. 2.....	457	Robinson-1.....	949	12	392	1,08		
	3 Red Bank.....	Miller, No. 1.....	458	Robinson-2.....	875	35	415	1,082		
				Robinson-1.....	896		408	1,092	875	
N. W.	1 Red Bank.....	Miller, No. 3.....	475	Stray.....	835		390	1,140		
	2 Ohio.....	Dausmann, No. 2.....	474	Robinson-1.....	855	75	380	1,120		
S. W.	1 Ohio.....	Kennedy, No. 1.....	453	Robinson-3.....	950		475	1,025		
				Robinson-2.....	921		447	1,053	953	
				Robinson-3.....	910		457	1,043	915	
	2 Ohio.....	Kennedy, No. 5.....	455	Robinson-4.....	938		483	1,017	942	
	3 Ohio.....	Kennedy, No. 3.....	455	Robinson-1.....	929	33	374	1,126	935	
	4 Ohio.....	Kennedy, No. 4.....	453	Robinson-1.....	936	33	373	1,170	860	
	5 Ohio.....	Kennedy, No. 2.....	460	Robinson-1.....	920	20	370	1,130		
				Robinson-2.....	845	13	405	1,068	865	
	6 Treat, Crawford & Treat.....	Purell, No. 4.....	465	Robinson-1.....	840		375	1,125		
				Robinson-3.....	924	19	459	1,041	924	



Crawford County—Honey Creek Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
31— S. W...	7	Treat, Crawford & Treat.	Purcell No. 2.	457 {	Stray.....	816	.....	359	1, 141	.....	10	Gas well.....
	8	Treat, Crawford & Treat.	Purcell, No. 1.	455 {	Robinson-1.....	863	.....	406	1, 094	.....	Gas	.....
	9	Treat, Crawford & Treat.	Purcell, No. 3.	470 {	Robinson-3.....	900	67	445	1, 055	925	10	Well abandoned.....
	10	Leeper Bros.....	Sparks, No. 7.	455 {	Robinson-1.....	864	.....	394	1, 106	.....	10	.....
	11	Leeper Bros.....	Sparks, No. 11.	460 {	Robinson-4.....	953	22	483	1, 017	953	.....	.....
	12	Leeper Bros.....	Sparks, No. 3.	456 {	Robinson-1.....	817	27	362	1, 138	825	.....	.....
	13	Leeper Bros.....	Sparks, No. 1.	456 {	Robinson-2.....	849	11	394	1, 106	.....	.....	.....
	14	Leeper Bros.....	Sparks, No. 2.	456 {	Robinson-1.....	819	15	359	1, 141	892	.....	.....
	15	Ohio.....	Reinochl, No. 3.	460 {	do.....	822	9	366	1, 134	.....	.....	.....
	16	Ohio.....	Reinochl, No. 4.	454 {	do.....	828	.....	372	1, 128	833	.....	.....
	17	Ohio.....	Reinochl, No. 5.	453 {	Stray.....	842	.....	386	1, 114	.....	Gas	.....
	18	Ohio.....	Reinochl, No. 2.	455 {	Robinson-2.....	865	5	409	1, 091	933	.....	.....
	19	Ohio.....	Reinochl, No. 1.	457 {	Robinson-1.....	823	12	367	1, 133	933	Dry	Salt water, 933 feet.....
	20	Ohio.....	Reinochl, No. 7.	456 {	do.....	837	18	377	1, 123	.....	35	Salt water, 945 feet.....
	21	Ohio.....	Reinochl, No. 6.	452 {	Robinson-2.....	888	14	428	1, 072	.....	.....	.....
	1	Ohio.....	Clark, No. 4.	459 {	Robinson-1.....	860	5	406	1, 094	967	15	.....
	2	Ohio.....	Clark, No. 5.	458 {	Robinson-4.....	967	14	513	987	.....	60	Gas, 838 feet.....
	3	Ohio.....	Clark, No. 3.	466 {	Robinson-1.....	835	55	382	1, 118	838	25	Salt water, 975 feet.....
	4	Ohio.....	Clark, No. 1.	471 {	Robinson-3.....	941	.....	486	1, 014	954	56	Gas, 935 feet, salt water, 968 feet.....
	5	Ohio.....	Clark, No. 2.	468 {	do.....	930	40	473	1, 027	940	.....	No record.....
	6	Ohio.....	Clark, No. 7.	469 {	Robinson-4.....	945	22	493	1, 007	948	4	Gas, 945 feet; salt water, 967 feet.....
S. E....	1	Ohio.....	Clark, No. 4.	459 {	Robinson-2.....	908	24	449	1, 051	920	25	Gas, 908 feet.....
	2	Ohio.....	Clark, No. 5.	458 {	do.....	900	31	442	1, 058	910	15	Gas, 900 feet.....
	3	Ohio.....	Clark, No. 3.	466 {	do.....	919	36	453	1, 047	928	60	Gas, 924 feet.....
	4	Ohio.....	Clark, No. 1.	471 {	do.....	890	22	419	1, 081	.....	Gas	895 feet.....
	5	Ohio.....	Clark, No. 2.	468 {	Robinson-3.....	943	24	472	1, 028	951	45	.....
	6	Ohio.....	Clark, No. 7.	469 {	do.....	947	.....	479	1, 021	963	15	.....
					do.....	943	12	474	1, 026	950	15	Gas, 944 feet. Salt water, 978 feet.....



Crawford County—Honey Creek Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
32—S. E...	3	Wilcox & Schuler.	Jackson, No. 1.	502	.....	.....	.....	.....	.....	.....	.....	Dry	No record.....
	4	Wilcox & Schuler.	Jackson, No. 2.	502	.....	.....	.....	.....	.....	.....	.....	Dry	do.....
	5	Red Bank.....	Garrard, No. 1.	516	.....	930	.....	414	1,086	.....	1,010	Dry	Salt water, 1,005 feet.....
33—S. W...	1	Ohio.....	Rich, No. 1.....	500	.....	926	.....	426	1,074	.....	.....	Dry	Salt water, 1,002 feet.....
34—S. E...	1	Ohio.....	Simmons, No. 1.	582	.....	930	2	378	1,122	.....	976	Gas	Gas, 960 feet.....
	2	Shaffer.....	Kent, No. 1.....	587	.....	940	.....	353	1,147	.....	986	Dry	Gas, 940 feet. Salt water, 970 feet.....
35—S. W...	1	Shaffer.....	Evans, No. 1.....	566	.....	.....	.....	.....	.....	.....	.....	Gas	No record.....

Crawford County—Martin Township.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
1— N. E..	1	Hazelwood.....	A. Pope, No. 17.....	470 {	Robinson-1.....	824	14	354	1,146	.....	.....	.....
	2	Hazelwood.....	A. Pope, No. 15.....	471 {	Robinson-2.....	847	11	377	1,123	.....	.....	.....
	3	Hazelwood.....	A. Pope, No. 11.....	469 {	Robinson-1.....	816	22	345	1,155	.....	.....	.....
	4	Hazelwood.....	A. Pope, No. 13.....	471 {	Robinson-2.....	823	16	381	1,119	.....	.....	.....
	5	Hazelwood.....	A. Pope, No. 12.....	465 {	Robinson-1.....	816	25	354	1,146	.....	.....	.....
	6	Hazelwood.....	A. Pope, No. 10.....	465 {	Robinson-2.....	857	18	345	1,155	.....	.....	.....
	7	Hazelwood.....	A. Pope, No. 14.....	464 {	Robinson-1.....	813	12	386	1,114	.....	.....	.....
	8	Hazelwood.....	A. Pope, No. 9.....	465 {	Robinson-2.....	850	23	348	1,152	.....	.....	.....
	9	Hazelwood.....	A. Pope, No. 8.....	460 {	Robinson-1.....	808	15	385	1,115	.....	.....	.....
	10	Hazelwood.....	A. Pope, No. 7.....	464 {	Robinson-2.....	824	12	343	1,157	.....	.....	.....
	11	Hazelwood.....	A. Pope, No. 4.....	455 {	Stray.....	850	16	359	1,141	.....	.....	.....
	12	Hazelwood.....	A. Pope, No. 5.....	458 {	Robinson-1.....	820	12	385	1,115	.....	.....	.....
	13	Ohio.....	M. Kersey, No. 1.....	456 {	Robinson-2.....	851	25	356	1,144	.....	.....	.....
	14	Ohio.....	M. Kersey, No. 3.....	453 {	Robinson-1.....	804	8	387	1,113	.....	.....	.....
	15	Ohio.....	M. Kersey, No. 2.....	464 {	Robinson-2.....	804	23	339	1,161	.....	.....	.....
	16	Ohio.....	M. Kersey, No. 5.....	465 {	Robinson-1.....	798	26	338	1,162	.....	.....	.....
	17	Ohio.....	M. Kersey, No. 7.....	463 {	Robinson-2.....	797	24	333	1,167	.....	.....	.....
	18	Ohio.....	M. Kersey, No. 4.....	457 {	Robinson-1.....	780	18	325	1,175	.....	.....	.....
	19	Ohio.....	A. Kersey, No. 1.....	463 {	Robinson-2.....	853	5	396	1,102	.....	.....	.....
					Robinson-1.....	781	31	323	1,177	.....	.....	.....
					Robinson-2.....	821	7	363	1,137	.....	.....	.....
					Robinson-1.....	802	.....	346	1,154	.....	8	Gas, 796 feet
					Robinson-1.....	800	7	348	1,152	.....	20	.....
					Robinson-2.....	818	22	366	1,134	.....	.....	.....
					Robinson-3.....	856	28	404	1,096	.....	.....	.....
					Robinson-1.....	808	.....	344	1,156	.....	80	Gas, 810 feet
					Robinson-1.....	806	.....	341	1,159	.....	50	Gas, 806 feet
					Robinson-1.....	828	.....	365	1,135	.....	.....	.....
					Robinson-3.....	894	.....	431	1,069	.....	.....	.....
					Robinson-1.....	798	14	341	1,159	.....	25	.....
					Robinson-1.....	815	10	352	1,148	.....	125	Gas, 815 feet
					Robinson-2.....	858	8	395	1,105	.....	.....	.....

## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
1— N. E.	20	Ohio.....	A. Kersey, No. 3.....	465 {	Robinson-1.....	818	22	353	1,147	820	400	Gas, 818 feet.....
	21	Ohio.....	E. Kersey, No. 2.....	466 {	Robinson-2.....	850	28	385	1,115	835	400	Gas, 832 feet.....
	22	Ohio.....	E. Kersey, No. 3.....	467 {	Robinson-1.....	830	14	364	1,136	860		
	23	Ohio.....	E. Kersey, No. 1.....	464 {	Robinson-2.....	850	20	384	1,116			
	24	Ohio.....	A. Kersey, No. 4.....	465 {	Stray.....	800	7	333	1,167			
	25	Ohio.....	A. Kersey, No. 2.....	461 {	Robinson-2.....	826	13	362	1,138	828		Gas, 826 feet.....
	26	Ohio.....	J. Hudson, No. 1.....	473 {	Robinson-3.....	888	34	424	1,076	890	300	Best production, 850 feet.
	27	Ohio.....	M. Kersey, No. 6.....	466 {	Robinson-2.....	828	8	363	1,137	850	50	
	28	Hazelwood.....	Wilson, No. 2.....	450 {	Robinson-3.....	894	8	429	1,071	895		Gas, 806 feet.....
	29	Hazelwood.....	Wilson, No. 4.....	451 {	Robinson-1.....	806	19	345	1,155	812	5	Best production, 885 feet.
	30	Hazelwood.....	Wilson, No. 3.....	445 {	Robinson-3.....	881	30	420	1,080	885		Gas, 800 feet.....
N. W.	1	Red Bank.....	F. Frost, No. 1.....	442 {	Robinson-2.....	800	3	327	1,173	820		Salt water, 898 feet.
	2	Reb Bank.....	F. Frost, No. 2.....	443 {	Robinson-3.....	895	5	422	1,078			Well abandoned.....
	3	Ohio.....	F. Frost, No. 1.....	445 {	Stray.....	785	10	319	1,181			Gas, 785 feet.....
	4	Ohio.....	F. Frost, No. 2.....	445 {	Robinson-1.....	890	23	424	1,076	890	25	Salt water, 923 feet.....
	1	Hazelwood.....	Wilson, No. 5.....	455 {	Robinson-1.....	785	11	335	1,165			
	2	Hazelwood.....	Wilson, No. 6.....	450 {	Robinson-2.....	921	5	371	1,129	849		
	3	Hazelwood.....	Wilson, No. 7.....	451 {	Stray.....	772	18	321	1,179			
	4	Hazelwood.....	Wilson, No. 8.....	451 {	Robinson-1.....	800	58	349	1,151			Gas, 840 feet. Salt water, 900 feet.....
	1	Hazelwood.....	Wilson, No. 9.....	445 {	Robinson-2.....	840	33	389	1,111	878		900 feet.....
	2	Hazelwood.....	Wilson, No. 10.....	455 {	Robinson-1.....	782	18	337	1,163	825		
	3	Hazelwood.....	Wilson, No. 11.....	455 {	Stray.....	782	36	327	1,173	785		
	4	Hazelwood.....	Wilson, No. 12.....	455 {	Robinson-3.....	858	23	403	1,097	860	100	
	1	Red Bank.....	F. Frost, No. 1.....	442 {	Robinson-1.....	783	12	341	1,159	770	160	
	2	Reb Bank.....	F. Frost, No. 2.....	442 {	do.....	767	9	325	1,175			Slate, 787 to 789 feet.....
	3	Ohio.....	F. Frost, No. 3.....	443 {	do.....	775	9	332	1,168	862		No second lens.....
	4	Ohio.....	F. Frost, No. 4.....	445 {	Stray.....	789		346	1,154			
	1	Ohio.....	F. Frost, No. 5.....	445 {	Robinson-1.....	795		350	1,150			
	2	Ohio.....	F. Frost, No. 6.....	445 {	Robinson-3.....	887		442	1,058		Dry	

S. W. . . .	Well	No.	Owner	Depth	Production	Remarks	Notes	Gas	Water	Oil	Other	Total	Remarks
S. W. . . .	5 Haselwood	437	Wilson, No. 1	744	307	1,193							Gas. Well abandoned.
	6 Red Bank	441	F. Frost, No. 2	324	366	1,134							
	7 Red Bank	442	F. Frost, No. 3	773	332	1,168							
	8 Ohio	443	L. Smith, No. 1	768	18	326	1,174						water,
	9 Ohio	443	A. Mann, Acct. 2, No. 1	875	8	435	1,065						water,
	10 Ohio	443	A. Mann, Acct. 2, No. 1	865	15	423	1,077						water,
	11 Ohio	443	A. Mann, Acct. 2, No. 5	860	19	423	1,077						water,
	12 Ohio	443	A. Mann, Acct. 2, No. 2	861	149	418	1,083						water,
	13 Ohio	443	A. Mann, Acct. 2, No. 3	864	426	1,074							water,
	14 Ohio	443	A. Mann, Acct. 2, No. 3	856	414	1,086							water,
S. E. . . .	15 Ohio	437	A. Mann, Acct. 2, No. 4	845	20	408	1,092						oil, ft
	16 Ohio	437	A. Mann, Acct. 2, No. 6	827	43	390	1,110						
	17 Ohio	437	A. Mann, Acct. 2, No. 6	806	15	472	1,028						
	18 Ohio	437	A. Mann, Acct. 2, No. 6	794	10	358	1,142						
	19 Ohio	437	A. Mann, Acct. 2, No. 6	800	10	444	1,056						
	20 Ohio	437	A. Mann, Acct. 2, No. 6	800	10	444	1,056						
	21 Ohio	437	A. Mann, Acct. 2, No. 6	800	10	444	1,056						
	22 Ohio	437	A. Mann, Acct. 2, No. 6	800	10	444	1,056						
	23 Ohio	437	A. Mann, Acct. 2, No. 6	800	10	444	1,056						
	24 Ohio	437	A. Mann, Acct. 2, No. 6	800	10	444	1,056						

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company	Name of well.	Sur- face ele- va- tion— feet.	Sand					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
2— N. E..	1	Ohio.....	G. W. Jones, No. 1.....	442	Robinson-2.....	835	.....	393	1,107	.....	.....	.....	Gas, 837 feet.....
	2	Ohio.....	G. W. Jones, No. 6.....	440	..do.....	857	21	417	1,083	868	.....	75	Gas, 860 feet.....
	3	Ohio.....	Coulter, No. 6.....	441	..do.....	852	.....	411	1,089	860	.....	10	Gas, 852 feet.....
	4	Ohio.....	Coulter, No. 7.....	448	..do.....	860	.....	412	1,088	870	.....	15	Gas, 860 feet.....
	5	Ohio.....	Coulter, No. 8.....	441	Robinson-1.....	783	27	342	1,158	788	.....	75	Gas, 783 feet.....
	6	Ohio.....	Coulter, No. 5.....	450	..do.....	823	17	373	1,127	830	.....	100	Gas, 823 feet.....
	7	Ohio.....	Coulter, No. 3.....	455	Robinson-2.....	848	30	398	1,102	.....	.....	.....	.....
	8	Ohio.....	Coulter, No. 2.....	455	Robinson-1.....	830	23	375	1,125	.....	.....	.....	.....
	9	Ohio.....	Coulter, No. 1.....	457	..do.....	810	22	355	1,145	.....	.....	.....	.....
	10	Ohio.....	Coulter, No. 4.....	455	..do.....	800	22	343	1,157	.....	.....	.....	.....
	11	Ohio.....	G. W. Jones, No. 4.....	459	..do.....	788	19	333	1,167	.....	.....	.....	.....
	12	Ohio.....	G. W. Jones, No. 2.....	460	..do.....	799	.....	340	1,160	802	.....	75	Gas, 784 feet.....
	13	Ohio.....	G. W. Jones, No. 3.....	464	..do.....	803	19	343	1,157	808	.....	200	Gas, 803 feet.....
	14	Ohio.....	G. W. Jones, No. 7.....	460	..do.....	796	.....	332	1,168	808	.....	75	Gas, 786 feet.....
N. W..	15	Ohio.....	G. W. Jones, No. 5.....	465	Robinson-3.....	800	20	340	1,160	.....	.....	50	Gas, 800 feet.....
	1	Riddle.....	Marshall, No. 6.....	471	..do.....	807	16	427	1,073	890	.....	50	Salt water, 920 feet.....
	2	Riddle.....	Marshall, No. 5.....	466	Robinson-1.....	800	8	433	1,071	905	.....	.....	.....
	3	Riddle.....	Marshall, No. 3.....	463	Robinson-2.....	806	67 1/2	329	1,171	.....	.....	150	Gas, 859 feet.....
	4	Riddle.....	Marshall, No. 4.....	470	..do.....	800	20	334	1,160	903	.....	100	.....
	5	Riddle.....	Marshall, No. 7.....	467	..do.....	808	22	345	1,155	.....	.....	100	.....
	6	Riddle.....	Marshall, No. 8.....	471	..do.....	825	23	355	1,145	.....	.....	100	.....
	7	Riddle.....	Marshall, No. 2.....	471	Robinson-2.....	799	31	332	1,168	818	.....	.....	.....
	8	Riddle.....	Marshall, No. 1.....	470	Robinson-3.....	859	26	392	1,108	.....	992	.....	Gas, 885 feet.....
	9	Treat, Crawford & Treat.....	Due, No. 4.....	463	Robinson-1.....	802	17	331	1,169	.....	.....	100	.....
	10	Treat, Crawford & Treat.....	Due, No. 7.....	461	..do.....	825	26	354	1,146	.....	.....	.....	Gas, 885 feet.....

12	Treat, Crawford & Treat.	Due, No. 5.	482	524	31	272	1,126	260	
13	Associated Producers....	Due, No. 8.	483	524	10	272	1,126		Slate, 635 feet to 630 feet.
14	Treat, Crawford & Treat.	Due, No. 3.	483	524	25	272	1,126	554	
15	Treat, Crawford & Treat.	Due, No. 2.	484	524	37	272	1,126	850	
16	Treat, Crawford & Treat.	Due, No. 1.	484	524	33	272	1,126	250	
17	Ohio.....	V. Parker, No. 5.	476	524	28	272	1,126	848	
				524	412	1,088			Gas, 825 feet. 5,000,000 cubic feet gas.
18	Ohio.....	V. Parker, No. 6.	480	516	12	436	1,064	920	
19	Ohio.....	V. Parker, No. 7.	477	516	18	436	1,072	576	
20	Ohio.....	V. Parker, No. 8.	477	516	23	436	1,072	912	
21	Ohio.....	V. Parker, No. 8.	477	516	33	436	1,072	900	
22	Ohio.....	V. Parker, No. 3.	470	508	40	436	1,072	860	
23	Ohio.....	V. Parker, No. 1.	463	508	15	436	1,072	830	
24	Ohio.....	V. Parker, No. 2.	473	508	26	436	1,072	838	
25	Ohio.....	V. Parker, No. 4.	473	508	33	436	1,072	870	
26	Ohio.....	Lamb, No. 2.	463	508	33	436	1,072		
27	Ohio.....	Lamb, No. 3.	476	508	33	436	1,072		
28	Ohio.....	Lamb, No. 5.	476	508	33	436	1,072		
29	Ohio.....	Lamb, No. 4.	465	508	33	436	1,072		
30	Samuels & McArthur.	Lamb, No. 1.	468	508	33	436	1,072		
31	Samuels & McArthur.	Lamb, No. 2.	473	508	33	436	1,072		
32	Samuels & McArthur.	Lamb, No. 3.	474	508	33	436	1,072		
33	Leaper Bros.	Section, No. 1.	467	508	33	436	1,072		
34	Leaper Bros.	Section, No. 2.	468	508	33	436	1,072		
35	Pease & Co.	Lathrop & McCarty, No. 1.	456	508	6	392	1,111		No record
36	Pease & Co.	Lathrop & McCarty, No. 5.	460	508	10	404	1,094	867	Red shale. 624 to 655 feet.
37	Pease & Co.	Lathrop & McCarty, No. 2.	464	508	12	412	1,088	588	Oil of about 36° gravity..
38	Pease & Co.	Lathrop & McCarty, No. 3.	464	508	16	421	1,080		
39	Pease & Co.	Lathrop & McCarty, No. 4.	465	508	17	424	1,083	919	
40	Ohio.....	Baker, No. 2.	455	508	37	394	1,116	903	
41	Ohio.....	Baker, No. 1.	453	508	37	394	1,116	40	
42	Ohio.....	Randolph, No. 1.	449	508	43	428	1,072	15	
43	Ohio.....	Randolph, No. 2.	435	508	43	428	1,072	45	Gas, 918 feet
44	Ohio.....	Randolph, No. 3.	435	508	43	428	1,072	320	Gas, 905 feet.
45	Ohio.....	Randolph, No. 6.	448	508	22	445	1,064	809	Bottom of sand.
46	Ohio.....	Randolph, No. 8.	441	508	58	421	1,079	923	Gas, 807 feet.
47	Ohio.....	Randolph, No. 7.	435	508	21	421	1,080	880	Gas, 857 feet.
48	Ohio.....	Randolph, No. 5.	441	508	19	421	1,073	873	Gas, 870 feet.
49	Ohio.....	Randolph, No. 4.	441	508	23	392	1,106	845	Gas, 833 feet. Salt water.
50	Ohio.....	Randolph, No. 5.	444	508	11	357	1,143		860 feet.
51	Ohio.....	Randolph, No. 4.	443	508	23	424	1,076	878	Gas, 867 feet.
52	Ohio.....	Randolph, No. 3.	443	508	34	409	1,091	855	Gas, 852 feet.
53	Ohio.....	Randolph, No. 3.	443	508	34	409	1,091	805	Gas, 803 feet.
54	P. Ewing.	Randolph, No. 5.	441	508	17	390	1,110	843	Best production.
55	P. Ewing.	Randolph, No. 3.	441	508	14	376	1,124		No record
56	P. Ewing.	Randolph, No. 2.	444	508	6	432	1,066		
57	P. Ewing.	Randolph, No. 1.	445	508	5	385	1,117		

S. W...

S. E...



## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- vation— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
2— S. E...	12	P. Ewing	Randolph, No. 1	453	Robinson-1	853	20	400	1,100			No record
	13	P. Ewing	Randolph, No. 4	451								do
	14	P. Ewing	Randolph, No. 6	452								
	1	Pure	S. Shipman, No. 3	484	Robinson-1 Robinson-3	885 915	15 17	401 431	1,099 1,069		10	
3— N. E...	2	Pure	S. Shipman, No. 7	485	do	932	18	447	1,053	950		
	3	Pure	S. Shipman, No. 6	487	Robinson-2 Robinson-3	926 943	12 29	439 456	1,061 1,044	926 943		
	4	Pure	S. Shipman, No. 4	490	Robinson-2 Robinson-3	920 1,006	23 11	430 516	1,070 984			15 Slate, 943 to 1,006 feet
	5	Pure	S. Shipman, No. 5	481	Robinson-1 Robinson-3	880 935	25 18	399 454	1,101 1,046			
	6	Pure	S. Shipman, No. 1	476	Robinson-1	890	22	414	1,086	960	30	Slate, 905 to 935 feet
	7	Pure	S. Shipman, No. 2	480	Robinson-1	911	12	431	1,069	919	75	
	8	Ohio	Lamb, No. 6	477	Robinson-2	905	21	428	1,072	928	30	
	9	Ohio	Lamb, No. 7	478	Robinson-3	930	10	452	1,048			
	10	Ohio	Lamb, No. 1	473	do	936	12	463	1,037			
	11	Samuels & McArthur	S. Lamb, No. 4	471						952	Dry	No record
	1	Ohio	S. Shipman, No. 1	490		1,070		580	920		Dry	Salt water
11— N. E...	1	Ohio	D. Shipman, No. 1	436	Robinson-1	856	22	420	1,080	828		
	2	Ohio	D. Shipman, No. 3	436	Robinson-3	932		496	1,004	934	10	Gas, 932 feet. Salt water 950 feet
N. W..	3	Ohio	D. Shipman, No. 2	435	do	890	12	455	1,045	893		Gas, 892 feet
	4	Ohio	Conover, No. 2	435	Stray	986		561	939			Gas, 892 feet
	5	Ohio	Conover, No. 3	434	do	1,010	10	576	924			Dry Salt water, 996 feet
	6	Ohio	Conover, No. 1	439	do	1,026		587	913			Dry Salt water, 1,010 feet
	1	Hubbard	Baker, No. 1	448							Dry	No record
12— N. W..	1	Ohio	Jones, No. 1	451	Robinson-2	879		428	1,072			Well abandoned
	2	Ohio	Jones, No. 3	430	do	865		425	1,075	858	35	Gas, 855 feet

S. W.	434	Jones, No. 2.	Robinson-1.	850	23	418	890	100	do.
	433	Jones, No. 4.	Robinson-2.	870	6	437	873	46	Gas, 870 feet.
	436	Jones, No. 5.	Robinson-3.	896	10	433	890	50	Gas, 870 feet.
	444	Mann, No. 1.	Robinson-2.	881	14	450	895	50	Gas, 861 feet.
			Stray	904		550	950	Dry	Salt water, 904 feet. Well abandoned.
S. E.	463	Due, No. 1.	Robinson-2.	923	3	460	1,040	Show	
13—			Robinson-3.	933	41	500	1,000	Dry	Salt water, 904 feet.
19—		Baker, No. 1.	Robinson.	1,080		628	873	Dry	Salt water, 1,088 feet.
N. W.	459	Gross, No. 1.						Dry	No record.
	466	R. Woods, No. 1.		1,366	4	886	602	1,370	Dry Salt water.
S. W.	469	J. Sears, No. 1.		1,075		606	894	1,451	do.
				1,433		963	537		do.
20—	462	L. Smith, No. 4.	Robinson-3.	913		451	1,049	915	20 Gas, 915 feet.
N. E.	463	L. Smith, No. 5.	do.	907	20	444	1,058	912	20 Gas, 908 feet.
	463	Abbot, No. 3.	do.	915		464	1,046	921	12 Gas, 920 feet.
	464	Abbot, No. 2.	do.	918		454	1,046	922	4 do.
	460	Abbot, No. 1.	Robinson-1.	880		430	1,080	972	Salt water, 968 feet.
	462	Abbot, No. 4.		1,037		596	903		Salt water, 1,037 feet.
	464	Urbich, No. 2.							Dry No record.
		Urbich, No. 3.	Shallow	450	35	1-7	1,507		
	457		Robinson-1.	770	25	413	1,087		
N. W.			Robinson-3.	940	35	483	1,017		Dry
	447	Baldwin, No. 2.	do.	934		457	1,013		
		Willard, No. 1.	Stray	1,077	2	630	870		Dry Salt water.
	490		Robinson-2.	928		468	1,033	980	Dry Salt water, 976 feet.
	443								Dry No record.
S. E.	474	R. Siler, No. 5.	Robinson-1.	890		416	1,064	917	Gas, 902 feet.
21—	477	R. Siler, No. 8.	Robinson-2.	905		426	1,073	910	Quit in sand.
N. E.	473	R. Siler, No. 10.	Stray	825		352	1,148	938	150 Gas, 825 feet. Quit in sand.
									Quit in sand.
	473	R. Siler, No. 7.	Robinson-2.	900		426	1,073	900	Quit in sand.
	473	R. Siler, No. 9.	do.	897	47	424	1,076	935	Quit in sand.
	473	R. Siler, No. 6.	do.	897		424	1,076	929	Quit in sand.
	467	Wasson, No. 11.	Robinson-1.	880	50	413	1,087	940	Quit in sand.
	473	Wasson, No. 10.	Robinson-1.	902	22	429	1,071		
	473	Wasson, No. 12.	Robinson-1.	878	48	406	1,094		
	475	Wasson, No. 9.	Robinson-2.	910	30	435	1,085	940	
	475	Wasson, No. 8.	do.	902	24	427	1,073	935	
	477	Wasson, No. 7.	do.	908		431	1,089		
	473	S. Shire, No. 5.	do.	902	27	430	1,070	902	400 Gas, 902 feet.
	473	S. Shire, No. 6.	do.	893		421	1,079	900	150 Gas, 905 feet. Salt water, 910 feet.
									200 Gas, 913 feet. Salt water, 930 feet.
	473	S. Shire, No. 7.	do.	913		441	1,059	915	150 Gas, 915 feet.
	473	S. Shire, No. 16.	do.	914		442	1,058	918	200 Gas, 905 feet.
	473	S. Shire, No. 17.	do.	901		438	1,071	915	150 Gas, 911 feet.
	473	S. Shire, No. 4.	do.	911		438	1,062	915	

## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company	Name of well	Sur- face ele- va- tion— feet.	Name.	Sand.				Initial product—barrels.	Remarks.
						Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.		
N E.	19	Ohio.....	B. Shire, No. 1.....	474	Robinson-2.....	902	428	1,072	920	water	
	20	Ohio.....	B. Shire, No. 20.....	472	do.....	910	438	1,082	915	water	
	21	Ohio.....	B. Shire, No. 22.....	471	do.....	916	445	1,055	918	water	
	22	Ohio.....	B. Shire, No. 2.....	473	do.....	902	430	1,070	920	water	
	23	Ohio.....	B. Shire, No. 18.....	472	do.....	900	428	1,072	905	water	
	24	Ohio.....	B. Shire, No. 19.....	467	do.....	907	440	1,060	912	water	
	25	Ohio.....	B. Shire, No. 3.....	474	do.....	897	423	1,077	910	water	
	26	Ohio.....	B. Shire, No. 9.....	473	do.....	902	429	1,071	910	water	
	27	Ohio.....	B. Shire, No. 10.....	465	do.....	907	442	1,058	837	water	
	28	Ohio.....	B. Shire, No. 11.....	463	do.....	914	451	1,049	918	water	
	29	Ohio.....	B. Shire, No. 12.....	464	Robinson-1.....	887	423	1,077	883	water	
	N W.	30	Ohio.....	B. Shire, No. 13.....	464	No sands.....	911	474	1,026	945	water
40		Ohio.....	B. Shire, No. 14.....	467	Robinson-3.....	916	452	1,046	920	water	
50		Ohio.....	B. Shire, No. 21.....	484	Robinson-2.....	829	456	1,044	853	water	
60		Ohio.....	B. Shire, No. 2.....	473	do.....	945	460	1,034	945	water	
70		Ohio.....	B. Shire, No. 3.....	471	do.....	825	452	1,046	828	water	
80		Ohio.....	B. Shire, No. 11.....	472	do.....	904	450	1,064	914	water	
90		Ohio.....	B. Shire, No. 8.....	473	do.....	915	442	1,058	915	water	
10		Ohio.....	B. Shire, No. 1.....	472	do.....	920	448	1,032	930	water	
11		Ohio.....	B. Shire, No. 2.....	472	do.....	911	460	1,034	936	water	
12		Ohio.....	L. Smith, No. 6.....	468	do.....	944	467	1,033	942	water	
13		Ohio.....	L. Smith, No. 2.....	470	do.....	967	467	1,033	963	water	
W.		14	Ohio.....	L. Smith, No. 1.....	473	do.....	932	460	1,040	935	water
	15	Ohio.....	L. Smith, No. 3.....	473	Robinson-3.....	955	459	1,018	963	water	
	1	Ohio.....	B. Smith, No. 1.....	472	Robinson-2.....	932	460	1,040	935	water	
	2	Ohio.....	B. Smith, No. 2.....	476	Stray.....	873	397	1,102	897	water	

3	Ohio.....	J. A. Smith, No. 2.	471	Robinson-3	948	8	477	1,023	938	.....	5	Gas, 936 feet.
4	Ohio.....	J. A. Smith, No. 1.	470	Robinson-2	936	8	466	1,034	951	.....	10	Gas, 950 feet.
5	Red Bank.....	C. McCollin, No. 1.	465	Robinson-3	955	.....	490	1,010	.....	.....	.....	Reported dry
6	Morrison.....	Hughes, No. 1.	454	Robinson-2	904	44	450	1,050	.....	20	.....	.....
7	Morrison.....	Hughes, No. 2.	452	do.	896	41	443	1,057	911	.....	225	Salt water, 942 feet.
8	Morrison.....	Hughes, No. 3.	447	do.	900	36	453	1,047	923	.....	300	.....
9	Treat, Crawford & Treat.	Hawes, No. 4.	446	do.	890	26	433	1,067	.....	.....	300	.....
10	Treat, Crawford & Treat.	Hawes, No. 6.	446	do.	890	57	444	1,056	905	.....	300	.....
11	Treat, Crawford & Treat.	Hawes, No. 7.	446	do.	904	36	458	1,042	910	.....	300	.....
12	Treat, Crawford & Treat.	Hawes, No. 10.	469	do.	930	33	461	1,039	934	.....	300	.....
13	Treat, Crawford & Treat.	Hawes, No. 3.	468	Robinson-1	890	77	412	1,088	915	.....	300	.....
14	Treat, Crawford & Treat.	Hawes, No. 2.	472	Robinson-2	915	52	443	1,057	912	.....	300	.....
15	Treat, Crawford & Treat.	Hawes, No. 9.	468	do.	928	32	460	1,040	935	.....	300	.....
16	Treat, Crawford & Treat.	Hawes, No. 8.	469	do.	920	49	451	1,049	930	.....	310	.....
17	Treat, Crawford & Treat.	Hawes, No. 5.	470	do.	913	47	443	1,057	918	.....	300	.....
18	Treat, Crawford & Treat.	Hawes, No. 1.	471	Robinson 1	891	79	420	1,090	.....	.....	300	.....
1	Morrison.....	Carleton, No. 5.	471	Stray.....	850	.....	379	1,121	.....	.....	.....	.....
2	Morrison.....	Carleton, No. 4.	472	Robinson-2	900	45	429	1,071	.....	949	.....	.....
3	Morrison.....	Carleton, No. 3.	472	Shallow.....	896	44	424	1,076	.....	.....	500	Gas
4	Morrison.....	Carleton, No. 2.	467	Stray.....	817	.....	345	1,155	.....	.....	.....	do.
5	Morrison.....	Carleton, No. 6.	461	Robinson-2	902	38	430	1,070	.....	.....	500	.....
6	Morrison.....	Carleton, No. 8.	470	Stray.....	844	.....	377	1,123	.....	.....	.....	.....
7	Morrison.....	Carleton, No. 1.	452	Robinson-2	907	44	440	1,060	.....	.....	500	.....
8	Morrison.....	Carleton, No. 9.	473	do.	899	50	428	1,072	890	.....	.....	.....
9	Morrison.....	Carleton, No. 7.	461	do.	902	15	432	1,068	.....	.....	500	.....
10	Ohio.....	Carleton, No. 2.	455	Stray.....	822	15	370	1,130	.....	.....	.....	.....
11	Ohio.....	Carleton, No. 5.	452	Robinson-1	865	38	413	1,087	.....	.....	.....	.....
12	Ohio.....	Carleton, No. 1.	452	Robinson-2	900	35	427	1,073	910	.....	1,200	.....
13	Ohio.....	Carleton, No. 6.	451	do.	896	47	435	1,065	.....	.....	.....	.....
14	Ohio.....	Carleton, No. 3.	452	do.	878	45	423	1,077	878	.....	.....	.....
15	Ohio.....	Carleton, No. 4.	450	Robinson-1	891	36	439	1,061	.....	.....	50	.....
16	Ohio.....	Carleton, No. 8.	451	Robinson-2	866	27	414	1,086	.....	.....	.....	.....
17	Ohio.....	Carleton, No. 7.	450	Robinson-3	890	.....	439	1,061	.....	.....	.....	.....
18	Featzer, Copeland, et al.	Stewart, No. 7.	461	Robinson-2	934	7	483	1,017	.....	.....	.....	.....
19	Featzer, Copeland, et al.	Stewart, No. 6.	468	Robinson-1	900	.....	448	1,052	905	.....	.....	.....
20	Featzer, Copeland, et al.	Stewart, No. 8.	475	Robinson-2	850	36	400	1,100	865	.....	.....	.....
21	Featzer, Copeland, et al.	Stewart, No. 5.	470	do.	904	35	454	1,046	.....	.....	100	Gas, 881 feet.
22	Featzer, Copeland, et al.	Stewart, No. 4.	476	Robinson-1	890	32	429	1,071	884	.....	.....	.....
23	Featzer, Copeland, et al.	Stewart, No. 3.	451	Robinson-2	846	.....	396	1,104	.....	.....	.....	.....
24	Featzer, Copeland, et al.	Stewart, No. 2.	452	do.	890	29	440	1,060	.....	.....	.....	.....
25	Featzer, Copeland, et al.	Stewart, No. 1.	455	do.	897	13	427	1,073	900	916	.....	.....
				Robinson-3	921	7	451	1,049	.....	929	.....	.....
				Robinson-1	894	31	418	1,082	894	.....	600	Quit in sand
				do.	848	39	397	1,103	.....	.....	1,000	.....
				do.	844	40	392	1,108	855	.....	600	.....
				do.	857	36	402	1,098	860	.....	1,000	White coarse sand

## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
21— S. E.	26	Ohlo.....	McColpin, No. 1.....	450	Robinson-1.....	854	.....	404	1,096	856	.....	800 Gas, 854 feet. Salt water, 861 feet.....
	27	Ohlo.....	McColpin, No. 2.....	450	..do.....	845	.....	395	1,105	870	.....	150 Gas, 850 feet, Salt water. 870 feet.....
	28	Ohlo.....	McColpin, No. 3.....	451	..do.....	843	.....	392	1,108	850	.....	1,000 Gas, 845 feet.....
	29	Ohlo.....	McColpin, No. 6.....	458	..do.....	855	.....	397	1,103	865	.....	800 Gas, 860 feet. Salt water, 875 feet.....
	30	Featzer, Copeland et, al.....	McColpin, No. 5.....	457	..do.....	850	.....	393	1,107	855	.....	200 Gas, 850 feet.....
	31	Featzer, Copeland et, al.....	McColpin, No. 4.....	451	Robinson-2.....	863	.....	412	1,088	865	.....	1,100 Gas, 865 feet. Salt water, 870 feet.....
	32	Brown-Hogue.....	Wasson, No. 2.....	452	Robinson-1.....	842	20	390	1,110	862	904	.....
	33	Brown-Hogue.....	Wasson, No. 3.....	458	..do.....	860	50	402	1,098	.....	915	.....
	34	Brown-Hogue.....	Wasson, No. 4.....	469	Robinson-2.....	892	31	423	1,077	.....	.....	.....
	35	Brown-Hogue.....	Wasson, No. 6.....	472	..do.....	912	28	440	1,060	.....	.....	.....
	36	Brown-Hogue.....	Wasson, No. 5.....	465	..do.....	885	41	420	1,080	.....	.....	.....
22— N. E.	1	Red Bank.....	C. Martin, No. 10.....	484	Robinson-1.....	858	.....	374	1,126	.....	.....	Gas Gas, 858 feet. 1,500,000 cu. ft. gas from this well
	2	Red Bank.....	C. Martin, No. 7.....	484	Robinson-2.....	900	68	416	1,084	.....	.....	Gas, 900 feet.....
	3	Red Bank.....	C. Martin, No. 6.....	480	Robinson-1.....	855	.....	371	1,129	.....	.....	.....
	4	Red Bank.....	C. Martin, No. 3.....	470	Robinson-2.....	875	.....	391	1,109	.....	.....	.....
	5	Red Bank.....	C. Martin, No. 5.....	475	Robinson-3.....	943	.....	459	1,041	943	.....	.....
	6	Red Bank.....	C. Martin, No. 1.....	486	Robinson-1.....	840	.....	360	1,140	.....	.....	.....
					Robinson-2.....	875	20	395	1,105	890	.....	.....
					Robinson-3.....	925	10	445	1,055	925	35	.....
					Robinson-1.....	843	25	373	1,127	.....	.....	.....
					Robinson-2.....	873	27	403	1,097	873	50	.....
					Casey.....	859	.....	384	1,116	882	.....	.....
					Robinson-1.....	400	.....	+86	1,586	.....	.....	.....
					Robinson-1.....	860	24	374	1,126	.....	.....	.....
					Robinson-2.....	890	.....	404	1,096	902	.....	.....
										920	.....	.....



## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- vation— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane feet.			
22— N. E.	32	W. W. Splane	Prior, No. 7	473	Robinson-1	837	16	364	1,136	874		Gas
					Robinson-2	874	29	401	1,099			
					Robinson-3	936		463	1,037			
		W. W. Splane	Prior, No. 5	472	Robinson-1	851	22	379	1,121			
					Robinson-2	904	6	432	1,068	904		
					Robinson-3	935	30	463	1,037	940		Salt water, 954 to 965 feet.
	34	W. W. Splane	Prior, No. 2	465	Robinson-1	840	42	375	1,125			
					Robinson-2	897	6	432	1,068			Sand and slate, 966 to 976 feet.
					Robinson-3	937	1	472	1,028			Salt sand, 980 to 988 feet.
		W. W. Splane	Prior, No. 1	474	Robinson-1	845	25	371	1,129	847		Gas, 847 feet.
					Robinson-2	880	5	406	1,094			Coal, 825 to 830 feet.
					Robinson-3	940	27	466	1,034			
N. W.	36	W. W. Splane	Prior, No. 3	482	Robinson-1	862	52	380	1,120	899		
					Robinson-2	924	5	442	1,058			Salt water, 907 feet.
					Robinson-3	935	49	453	1,047	950		Salt water, 980 feet.
		Ohio	H. Martin, No. 3	484	Robinson-1	890	35	406	1,094	898		
					do	874	46	386	1,105	885		
					do	878	61	397	1,103			
	1	Ohio	H. Martin, No. 6	472	do	862	1	390	1,110			
					Robinson-2	907	8	435	1,065	907		
					Robinson-1	872	9	400	1,100			
		Ohio	H. Martin, No. 4	472	Robinson-2	901	36	429	1,071			
					do	880	37	425	1,075			
					do	905		433	1,067			Salt water, 926 feet.
	8	Ohio	H. Martin, No. 5	456	do	888		432	1,068			
					do	885	30	423	1,077			
					do	885	36	423	1,077			
		Wabash	J. Birch, No. 1	462	Robinson-1	886	22	419	1,061	894	15	Gas, 886 feet.
					Stray	826		353	1,147		500	Gas, 886 feet.
					Robinson-1	886	25	413	1,087			
	11	Red Bank	J. Birch, No. 1	473	Robinson-2	900	15	437	1,063			
	12	Ohio	do	463								

13	Ohio	J. Birch, No. 3	472	do	916	14	444	1,056	.....	.....	.....	.....	Salt water, 1,079 feet
14	Ohio	J. Birch, No. 4	456	Robinson-3	953	15	481	1,019	.....	.....	.....	.....	Gas, 907 feet
15	Ohio	J. Birch, No. 2	472	Robinson-2	901	47	445	1,055	.....	.....	.....	.....	5
16	Morrison	A. & E. Birch, No. 3	467	Robinson-3	938	30	482	1,018	.....	.....	.....	.....	20
17	Morrison	A. & E. Birch, No. 4	475	Robinson-2	909	32	437	1,063	.....	.....	.....	.....	100
18	Morrison	A. & E. Birch, No. 6	455	do	908	37	431	1,069	.....	.....	.....	.....	100
19	Morrison	A. & E. Birch, No. 1	455	do	902	16	427	1,073	.....	.....	.....	.....	100
20	McArthur	Wasson, No. 13	477	Robinson-3	900	25	445	1,055	.....	.....	.....	.....	100
21	McArthur	Wasson, No. 14	454	Robinson-2	942	29	487	1,013	.....	.....	.....	.....	20
22	McArthur	Wasson, No. 15	453	do	938	46	433	1,067	.....	.....	.....	.....	950
23	Morrison	A. & E. Birch, No. 5	454	do	903	13	425	1,075	.....	.....	.....	.....	920
24	Morrison	A. & E. Birch, No. 2	476	do	901	20	447	1,053	.....	.....	.....	.....	905
25	Morrison	Tohill, No. 7	458	do	875	16	422	1,078	.....	.....	.....	.....	Quit in sand
26	Morrison	Tohill, No. 6	462	Robinson-1	894	14	440	1,060	.....	.....	.....	.....	100
27	Morrison	Tohill, No. 5	481	Robinson-2	890	17	384	1,116	.....	.....	.....	.....	20
28	Morrison	Tohill, No. 4	476	Robinson-1	913	11	437	1,063	.....	.....	.....	.....	125
29	Morrison	Tohill, No. 1	482	Robinson-2	844	7	386	1,114	.....	.....	.....	.....	125
30	Morrison	Tohill, No. 2	477	do	893	15	435	1,065	.....	.....	.....	.....	125
31	Morrison	Tohill, No. 3	472	Robinson-3	890	10	428	1,072	.....	.....	.....	.....	Gas
1	Brown & Hogue	Wasson, No. 1	453	Robinson-1	952	14	490	1,010	.....	.....	.....	.....	125
2	Parker & Edwards	Tohill, No. 7	477	Robinson-2	870	31	389	1,111	.....	.....	.....	.....	Gas
3	Parker & Edwards	Tohill, No. 6	466	Robinson-3	904	10	423	1,077	.....	.....	.....	.....	125
4	Parker & Edwards	Tohill, No. 8	456	Robinson-2	860	10	384	1,116	.....	.....	.....	.....	Gas
5	Parker & Edwards	Tohill, No. 2	453	Robinson-1	899	31	413	1,067	.....	.....	.....	.....	125
6	Parker & Edwards	Tohill, No. 1	453	Robinson-2	872	15	390	1,110	.....	.....	.....	.....	125
7	Parker & Edwards	Tohill, No. 3	458	Robinson-3	897	31	415	1,065	.....	.....	.....	.....	125
8	Parker & Edwards	Tohill, No. 4	479	Robinson-2	872	10	396	1,105	.....	.....	.....	.....	125
9	Parker & Edwards	Tohill, No. 5	456	Robinson-1	897	14	420	1,060	.....	.....	.....	.....	Gas
10	Ohio	Tohill, No. 1	473	Robinson-2	857	10	385	1,115	.....	.....	.....	.....	125
11	Ohio	Tohill, No. 2	473	Robinson-3	919	7	447	1,053	.....	.....	.....	.....	125
12	Ohio	Tohill, No. 8	479	Robinson-2	832	10	379	1,121	.....	.....	.....	.....	125
13	Ohio	Tohill, No. 3	478	Robinson-1	899	36	416	1,064	.....	.....	.....	.....	Gas
14	Ohio	Tohill, No. 4	469	Robinson-2	889	40	412	1,068	.....	.....	.....	.....	914
15	Ohio	Tohill, No. 6	469	do	907	28	441	1,059	.....	.....	.....	.....	905
16	Ohio	Tohill, No. 10	474	Robinson-3	943	24	477	1,023	.....	.....	.....	.....	971
				Robinson-2	871	30	415	1,065	.....	.....	.....	.....	.....
				Robinson-3	903	39	447	1,053	.....	.....	.....	.....	.....
				Robinson-1	844	38	391	1,109	.....	.....	.....	.....	.....
				do	855	38	402	1,098	.....	.....	.....	.....	.....
				do	863	41	405	1,065	.....	.....	.....	.....	.....
				do	881	41	402	1,068	.....	.....	.....	.....	.....
				Robinson-3	925	26	470	1,030	.....	.....	.....	.....	.....
				Robinson-2	881	46	409	1,091	.....	.....	.....	.....	.....
				Robinson-1	840	50	367	1,133	.....	.....	.....	.....	.....
				Robinson-2	891	21	412	1,098	.....	.....	.....	.....	20
				Robinson-1	861	14	383	1,117	.....	.....	.....	.....	Gas, 891 feet
				Robinson-4	907	23	519	961	.....	.....	.....	.....	50
				Robinson-3	942	18	473	1,027	.....	.....	.....	.....	Well abandoned
				Robinson-4	908	17	529	971	.....	.....	.....	.....	.....
				Robinson-2	899	35	420	1,060	.....	.....	.....	.....	.....
				do	895	26	421	1,079	.....	.....	.....	.....	80
									.....	.....	.....	.....	Gas, 896 feet

S. W..



## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane feet.			
22— N. E..	32	W. W. Splane.	Prior, No. 7.	473	Robinson-1.	837	16	364	1,136	874		Gas.
					Robinson-2.	874	29	401	1,099			
					Robinson-3.	936		463	1,037			
					Robinson-1.	851	22	379	1,121			
					Robinson-2.	904	6	432	1,068	904		
					Robinson-3.	935	30	463	1,037	940		Salt water, 954 to 965 feet.
	33	W. W. Splane.	Prior, No. 5.	472	Robinson-1.	840	42	375	1,125			
					Robinson-2.	897	6	432	1,068			Sand and slate, 966 to 976 feet.
					Robinson-3.	937	1	472	1,028			Salt sand, 980 to 988 feet.
					Robinson-1.	845	25	371	1,129	847		Gas, 847 feet.
					Robinson-2.	890	5	406	1,094		Show	Coal, 825 to 830 feet.
					Robinson-3.	940	27	466	1,034			
N. W..	34	W. W. Splane.	Prior, No. 3.	482	Robinson-1.	862	52	390	1,120	899		
					Robinson-2.	924	5	442	1,058			Salt water, 907 feet.
					Robinson-3.	935	49	453	1,047	950		Salt water, 980 feet.
					Robinson-1.	890	35	406	1,094	898		
					do.	874	46	396	1,105	885		
					do.	878	61	397	1,103			
	1 2 3 4 5 6 7 8 9 10 11 12	Ohio.	H. Martin, No. 3.	472	do.	862	1	390	1,110	907		
					Robinson-2.	907	8	435	1,065			
					Robinson-1.	872	9	400	1,100			
					Robinson-2.	901	36	429	1,071			
					do.	890	37	425	1,075			
					do.	905		433	1,067			Salt water, 926 feet.
N. W..	8 9 10 11 12	Wabash.	J. Birch, No. 2.	466	do.	898	30	432	1,068			
					do.	885	36	423	1,077			
					Robinson-1.	886	22	419	1,081	894		
					Stray	828		353	1,147		15	Gas, 886 feet.
					Robinson-1.	886		413	1,087			
					Robinson-2.	900	15	437	1,063		500	Gas, 886 feet.
	1 2 3 4 5 6 7 8 9 10 11 12	Ohio.	do.	463	Robinson-1.	886		413	1,087			
					Robinson-2.	900		437	1,063			
					Robinson-1.	886		413	1,087			
					Robinson-2.	900		437	1,063			
					Robinson-1.	886		413	1,087			
					Robinson-2.	900		437	1,063			

13	Ohio	J. Birch, No. 3	472	do	916	14	444	1,059	.....	.....	.....	.....	Salt water, 1,079 feet
14	Ohio	J. Birch, No. 4	456	Robinson-3	943	.....	481	1,019	.....	.....	.....	.....	Gas, 907 feet
15	Ohio	J. Birch, No. 2	472	Robinson-2	901	15	445	1,053	.....	907	.....	5	.....
16	Morrison	A. & E. Birch, No. 3	467	Robinson-3	938	47	482	1,018	.....	.....	.....	.....	.....
17	Morrison	A. & E. Birch, No. 4	476	Robinson-2	909	30	437	1,063	.....	.....	.....	20	.....
18	Morrison	A. & E. Birch, No. 6	455	do	908	32	431	1,069	.....	.....	.....	100	.....
19	Morrison	A. & E. Birch, No. 1	455	do	902	37	427	1,073	.....	907	.....	.....	.....
20	McArthur	Wasson, No. 13	477	do	900	16	445	1,055	.....	.....	.....	.....	.....
21	McArthur	Wasson, No. 14	454	Robinson-3	942	25	487	1,013	.....	942	.....	100	.....
22	McArthur	Wasson, No. 15	453	Robinson-2	888	29	433	1,067	.....	900	.....	20	.....
23	Morrison	A. & E. Birch, No. 5	454	do	902	46	425	1,075	.....	.....	.....	.....	.....
24	Morrison	A. & E. Birch, No. 2	476	do	901	13	447	1,063	.....	.....	.....	.....	.....
25	Morrison	Tohill, No. 7	458	do	876	20	422	1,078	.....	.....	.....	.....	Quit in sand
26	Morrison	Tohill, No. 6	462	do	894	16	440	1,060	.....	.....	.....	100	.....
27	Morrison	Tohill, No. 5	481	Robinson-1	860	14	384	1,116	.....	.....	.....	.....	.....
28	Morrison	Tohill, No. 4	476	Robinson-2	913	17	437	1,063	.....	913	.....	20	.....
29	Morrison	Tohill, No. 1	482	Robinson-1	844	.....	386	1,114	.....	.....	.....	.....	.....
30	Morrison	Tohill, No. 2	477	Robinson-2	863	11	435	1,065	.....	.....	.....	125	.....
31	Morrison	Tohill, No. 3	472	do	890	7	428	1,072	.....	.....	.....	.....	.....
1	Brown & Hogue	Wasson, No. 1	453	Robinson-3	952	15	490	1,010	.....	.....	.....	125	.....
2	Parker & Edwards	Tohill, No. 7	477	Robinson-1	870	10	389	1,111	.....	.....	.....	.....	Gas
3	Parker & Edwards	Tohill, No. 6	466	Robinson-2	904	14	423	1,077	.....	.....	.....	125	.....
4	Parker & Edwards	Tohill, No. 8	456	Robinson-3	860	10	384	1,116	.....	.....	.....	.....	Gas
5	Parker & Edwards	Tohill, No. 2	453	Robinson-2	889	31	413	1,087	.....	.....	.....	125	.....
6	Parker & Edwards	Tohill, No. 1	453	Robinson-1	872	15	390	1,110	.....	.....	.....	.....	.....
7	Parker & Edwards	Tohill, No. 3	458	Robinson-2	897	31	415	1,085	.....	.....	.....	125	.....
8	Parker & Edwards	Tohill, No. 4	479	Robinson-3	872	10	395	1,105	.....	.....	.....	.....	.....
9	Parker & Edwards	Tohill, No. 5	455	Robinson-2	897	14	420	1,080	.....	.....	.....	125	.....
10	Ohio	Tohill, No. 1	472	Robinson-1	867	10	385	1,115	.....	.....	.....	.....	Gas
11	Ohio	Tohill, No. 2	473	Robinson-2	919	7	447	1,053	.....	.....	.....	125	.....
12	Ohio	Tohill, No. 8	479	Robinson-1	832	10	379	1,121	.....	.....	.....	.....	.....
13	Ohio	Tohill, No. 3	478	Robinson-2	869	36	416	1,084	.....	875 } 914	.....	.....	.....
14	Ohio	Tohill, No. 4	469	do	889	40	412	1,088	.....	905 }	.....	.....	.....
15	Ohio	Tohill, No. 6	469	Robinson-3	907	.....	441	1,059	.....	.....	.....	.....	.....
16	Ohio	Tohill, No. 10	474	Robinson-2	943	28	477	1,023	.....	.....	971	.....	.....
				Robinson-1	871	24	415	1,085	.....	.....	.....	.....	.....
				do	903	30	447	1,053	.....	.....	.....	.....	.....
				do	844	39	391	1,109	.....	.....	.....	.....	.....
				do	855	38	402	1,098	.....	.....	.....	.....	.....
				do	863	41	405	1,095	.....	.....	.....	.....	.....
				do	881	41	402	1,098	.....	.....	.....	.....	.....
				Robinson-3	925	28	470	1,030	.....	.....	.....	.....	.....
				Robinson-2	881	46	409	1,091	.....	890	.....	.....	.....
				Robinson-1	840	50	367	1,133	.....	.....	.....	.....	.....
				Robinson-2	891	21	412	1,098	.....	892	.....	20	Gas, 891 feet
				Robinson-1	861	14	383	1,117	.....	896	.....	.....	.....
				Robinson-4	907	23	519	981	.....	.....	.....	50	Well abandoned
				Robinson-3	942	18	473	1,027	.....	946	.....	.....	.....
				Robinson-4	908	17	529	971	.....	.....	.....	.....	.....
				Robinson-2	889	35	420	1,080	.....	.....	.....	.....	.....
				do	895	26	421	1,079	.....	898	.....	80	Gas, 896 feet

S. W.

## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- vation— feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
22— S. W.					Stray.....	798	8	336	1,164				
	17	Wattford.....	Doolittle, No. 6.....	462	Robinson-1.....	824	25	362	1,138				
					Robinson-2.....	868	15	406	1,094				
					Robinson-3.....	927	27	465	1,035		954		
	18	Wattford.....	Doolittle, No. 7.....	474	Robinson-1.....	865	1	391	1,109				
					Robinson-2.....	905	30	431	1,069	915			
					Robinson-3.....	947	32	473	1,027				
	19	Wattford.....	Doolittle, No. 5.....	478	Robinson-1.....	840	18	362	1,138				
					Robinson-2.....	870	8	392	1,108		935		
	20	Wattford.....	Doolittle, No. 4.....	475	Robinson-1.....	848	18	373	1,127				
S. E.					Robinson-2.....	882	31	407	1,093		934		
	21	Wattford.....	Doolittle, No. 3.....	468	Robinson-1.....	856		388	1,112				
					Robinson-3.....	942	14	474	1,026		961		Quit in sand
	22	Wattford.....	Doolittle, No. 2.....	484	Robinson-1.....	876	15	392	1,108				Slate, 891 to 985 feet.
					Robinson-4.....	985	10	501	999		995		No. 2 and 3 lenses out.
	23	Wattford.....	Doolittle, No. 1.....	485	Robinson-1.....	855	20	370	1,130				
					Robinson-2.....	901	22	416	1,084		923		
	24	Wattford.....	Doolittle, No. 8.....	480									No record.
	25	Wattford.....	Doolittle, No. 10.....	464									do.
	1	Red Bank.....	A. Smith, No. 5.....	481	Robinson-1.....	855	26	374	1,126	870		Dry	
	2	Red Bank.....	A. Smith, No. 6.....	481	Robinson-1.....	857		376	1,124			30	
S. E.					Robinson-3.....	970	10	489	1,011				
	3	Morrison.....	A. Smith, No. 6.....	474	Robinson-1.....	837		363	1,137				Gas, 837 feet.
					Robinson-2.....	885		411	1,089				Gas, 885 feet.
					Robinson-3.....	948	16	474	1,028				
	4	Ohio.....	A. Smith, No. 9.....	480	Robinson-1.....	852	18	372	1,128				
					Robinson-3.....	959	9	479	1,021	965	973	15	Gas, 963 feet.
S. E.	5	Ohio.....	A. Smith, No. 3.....	481	Robinson-1.....	853	52	372	1,128				
					Robinson-3.....	932	31	451	1,049			75	
S. E.	6	Ohio.....	A. Smith, No. 2.....	480	Robinson-1.....	853	59	373	1,127				
					Robinson-3.....	940	27	460	1,040			25	

7	Ohio.....	A. Smith, No. 8.....	481	Stray.....	921	10	440	1,060	962	.....	35	Gas, 956 feet.....
8	Ohio.....	A. Smith, No. 5.....	483	Robinson-3.....	950	20	469	1,031	.....	40	No record.....	
9	Watford.....	Doolittle, No. 12.....	487	Robinson-1.....	849	24	366	1,134	.....	.....	do.....	
10	Watford.....	Doolittle, No. 14.....	486	.....	.....	.....	.....	.....	.....	.....	do.....	
11	Watford.....	Doolittle, No. 9.....	484	.....	.....	.....	.....	.....	.....	.....	do.....	
12	Watford.....	Doolittle, No. 11.....	485	.....	.....	.....	.....	.....	.....	.....	do.....	
13	Watford.....	Doolittle, No. 13.....	486	.....	.....	.....	.....	.....	.....	.....	do.....	
14	Watford.....	Doolittle, No. 15.....	486	.....	.....	.....	.....	.....	.....	.....	do.....	
15	Ohio.....	A. Smith, No. 7.....	489	Robinson-1.....	841	6	352	1,148	.....	.....	35	Gas, 945 feet.....
16	Ohio.....	A. Smith, No. 6.....	490	Robinson-3.....	942	20	453	1,047	952	967	40	Gas, 858 feet.....
17	Ohio.....	A. Smith, No. 1.....	491	Robinson-1.....	855	40	365	1,135	858	.....	.....	.....
18	Ohio.....	A. Smith, No. 4.....	487	Robinson-3.....	954	5	464	1,036	.....	.....	.....	.....
19	Ohio.....	S. Tohill (1 acre), No. 1.....	484	Robinson-1.....	844	4	353	1,147	.....	.....	25	.....
20	Splane.....	Brubaker, No. 7.....	485	Robinson-3.....	932	43	441	1,059	.....	.....	.....	.....
21	Bruner & Splane.....	Brubaker, No. 5.....	487	Robinson-1.....	857	12	370	1,130	.....	.....	50	.....
22	Bruner & Splane.....	Brubaker, No. 4.....	487	Robinson-3.....	939	15	452	1,048	.....	.....	.....	.....
23	Bruner & Splane.....	Brubaker, No. 6.....	479	Robinson-1.....	845	3	361	1,139	.....	.....	20	.....
24	Bruner & Splane.....	Brubaker, No. 1.....	479	Robinson-3.....	951	14	467	1,033	.....	.....	.....	.....
25	Bruner & Splane.....	Brubaker, No. 2.....	484	Robinson-2.....	836	21	351	1,149	.....	.....	.....	.....
26	Bruner & Splane.....	Brubaker, No. 3.....	481	Robinson-3.....	875	22	390	1,100	.....	.....	.....	.....
1	Peoples Oil & Gas Co.....	Hopkins (upper) No. 2.....	521	Robinson-2.....	938	34	453	1,047	.....	.....	.....	.....
2	Peoples Oil & Gas Co.....	Hopkins (upper), No. 1.....	515	Robinson-3.....	900	12	413	1,087	902	.....	.....	Quit in sand.....
3	Morrison.....	Walters, No. 1.....	522	Robinson-2.....	856	.....	469	1,031	960	982	.....	.....
4	Morrison.....	Martin, No. 7.....	512	Robinson-1.....	883	29	396	1,104	883	922	.....	.....
5	Morrison.....	Martin, No. 5.....	504	Robinson-2.....	854	11	375	1,125	.....	.....	.....	Stray lens.....
6	Morrison.....	Martin, No. 6.....	505	Robinson-3.....	879	9	400	1,100	.....	.....	.....	Broken sand.....
7	Morrison.....	Martin, No. 1.....	509	Robinson-1.....	894	16	415	1,085	.....	.....	.....	.....
				Robinson-2.....	862	24	383	1,117	.....	.....	.....	.....
				Robinson-3.....	896	10	417	1,083	896	.....	.....	.....
				Stray.....	958	26	479	1,021	958	.....	.....	Gas, 879 feet.....
				Robinson-1.....	879	34	395	1,105	879	.....	.....	.....
				Robinson-2.....	845	.....	364	1,136	.....	.....	.....	.....
				Robinson-3.....	936	8	455	1,045	936	.....	.....	Black slate, 944 to 954 feet.....
				Robinson-1.....	954	24	473	1,027	954	990	.....	.....
				Robinson-2.....	909	97	388	1,112	.....	.....	.....	.....
				Robinson-3.....	1,013	41	492	1,008	.....	.....	Dry	Salt water, 1,013 feet. Well abandoned.....
				Robinson-1.....	918	22	403	1,097	.....	.....	Dry	.....
				Robinson-2.....	912	.....	390	1,110	.....	.....	.....	.....
				Robinson-3.....	937	.....	415	1,085	.....	.....	.....	.....
				Robinson-1.....	964	11	442	1,058	.....	.....	45	Gas sand.....
				Robinson-2.....	886	5	374	1,126	.....	.....	.....	.....
				Robinson-3.....	922	2	410	1,090	922	.....	Show	Salt water, 976 feet.....
				Robinson-1.....	976	34	464	1,036	980	.....	.....	.....
				Robinson-2.....	907	19	403	1,097	912	.....	50	.....
				Robinson-3.....	977	9	473	1,027	.....	.....	.....	.....
				Stray.....	962	6	457	1,043	.....	.....	.....	.....
				Robinson-1.....	975	16	470	1,030	975	.....	.....	Well abandoned.....
				Robinson-2.....	1,017	7	512	988	.....	1,028	.....	.....
				Robinson-3.....	936	23	427	1,073	.....	.....	50	.....

## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
23—N. E..	8	Morrison.....	Martin, No. 2.....	498	Robinson-1.....	905	45	407	1,083	915	50	.....
	9	Morrison.....	Martin, No. 3.....	500	do.....	909	10	409	1,091	.....	.....	.....
	1	Ohio.....	Reed, No. 8.....	501	Robinson-2.....	937	23	437	1,083	.....	50	.....
	2	Ohio.....	Reed, No. 9.....	492	Robinson-3.....	963	5	463	1,037	.....	80	Gas, 917 feet.
N. W..	3	Ohio.....	Reed, No. 7.....	500	Stray.....	915	7	414	1,086	917	.....	No record. Well abandoned.
	4	Ohio.....	Reed, No. 4.....	484	Robinson-2.....	930	10	429	1,071	934	.....	No record. Well abandoned.
	5	Parker-Crowly.....	Crowly, No. 1.....	490	.....	.....	.....	.....	.....	.....	Dry	No record.
	6	Parker-Crowly.....	Crowly, No. 3.....	496	Robinson-1.....	868	.....	.....	.....	.....	5	No record.
	7	Parker-Crowly.....	Crowly, No. 2.....	500	do.....	875	20	385	1,115	.....	.....	Well abandoned.
	8	Parker-Crowly.....	Crowly, No. 4.....	500	Robinson-2.....	908	47	418	1,082	975	.....	.....
	9	Parker-Edwards.....	Crowly, No. 1.....	485	Robinson-2.....	910	10	414	1,086	.....	.....	.....
	10	Parker-Edwards.....	Crowly, No. 2.....	492	Stray.....	935	5	439	1,061	952	.....	.....
	11	Wark.....	Dennis, No. 4.....	484	Robinson-2.....	920	21	420	1,080	930	.....	Gas, 926 feet.
	12	Ohio.....	C. T. Stewart, No. 4.....	482	do.....	920	18	420	1,080	948	.....	Salt water, 948 feet.
	13	Ohio.....	C. T. Stewart, No. 1.....	474	Robinson-1.....	890	.....	385	1,105	925	Dry	Salt water, 895 feet.
	14	Ohio.....	C. T. Stewart, No. 5.....	478	Robinson-1.....	860	57	376	1,124	905	.....	Salt water, 906 feet. Well abandoned.
	15	Ohio.....	C. T. Stewart, No. 3.....	487	Robinson-3.....	932	18	448	1,052	.....	75	.....
	16	Ohio.....	C. T. Stewart, No. 2.....	491	Robinson-1.....	874	6	392	1,108	964	.....	.....
	17	Ohio.....	Sparks, No. 1.....	498	Robinson-3.....	919	22	437	1,063	932	80	Gas, 930 feet.
	18	Ohio.....	Sparks, No. 2.....	504	Robinson-2.....	875	.....	401	1,099	902	60	Gas, 912 feet.
	19	Ohio.....	Sparks, No. 3.....	482	Robinson-1.....	849	17	371	1,129	.....	.....	.....
					Robinson-2.....	869	35	391	1,109	876	50	Gas, 876 feet.
					do.....	888	.....	401	1,099	.....	300	Gas, 895 feet.
					Robinson-3.....	935	.....	444	1,056	936	45	Gas, 930 feet.
					do.....	932	.....	434	1,066	940	45	Gas, 936 feet.
					do.....	940	.....	436	1,064	946	20	Gas, 944 feet.
					Robinson-1.....	876	24	394	1,106	.....	.....	.....
					Robinson-2.....	910	57	428	1,072	920	150	Gas, 915 feet.

20 Ohio	o. 4.	491	Stray	928	21	429	1,071	923	100 Gas, 924 feet.
21 Ohio	o. 5.	497	Robinson-2	911	6	414	958	914	40 Gas, 935 feet.
1 Red Bank	No. 3	498	Robinson-2	955	3	396	1,124	938	
2 Red Bank	No. 2	498	Robinson-2	984	11	385	1,105		500
3 Red Bank	No. 1	499	Robinson-2	990	17	434	1,066		20
4 Ohio	No. 1	499	Robinson-2	870	41	380	1,130	867	260
5 Ohio	No. 2	499	Robinson-3	994	21	404	1,066		
6 Ohio	No. 2	499	Robinson-3	990	10	440	1,080		
7 Ohio	No. 3	499	Robinson-3	987	7	374	1,126		
8 Ohio	No. 3	499	Robinson-3	937		444	1,056	937	963
9 Ohio	No. 7	494	Robinson-3	937		443	1,037	940	Dry No record
10 Ohio	No. 9	500	Robinson-1	853		352	1,116		Gas, 933 feet.
11 Ohio	No. 13	496	do	981	26	396	1,134	857	Dry Gas, 933 feet. Salt water, 965 feet.
12 Pure	No. 19	494	Robinson-2	966	56	373	1,127	886	No record
13 Pure	No. 15	502	Robinson-3	953	15	343	1,149		Gas, 872 feet.
14 Pure	leirs, No. 3	513	Robinson-3	930	23	437	1,073	937	75
15 Pure	leirs, No. 4	515	Robinson-2	986	4	353	1,117		
16 Pure	leirs, No. 5	513	Robinson-3	920	21	405	1,090	975	35
17 Pure	leirs, No. 6	509	do	890	17	367	1,133	897	60
18 Pure	leirs, No. 1	499	Robinson-3	928	28	381	1,119		
19 Pure	leirs, No. 2	498	Robinson-4	1,002	7	419	1,081		
20 Pure	leirs, No. 3	499	Robinson-4	972	3	483	1,077	1,027	30
21 Pure	leirs, No. 4	499	Robinson-4	960	4	404	1,096		
22 Pure	leirs, No. 5	499	Stray	1,045	2	547	953		
23 Pure	leirs, No. 6	499	Robinson-1	985	25	398	1,102	1,132	Dry No record
24 Pure	leirs, No. 7	497	Robinson-4	981	21	434	1,016		
25 Pure	leirs, No. 8	499	Robinson-3	982	24	391	1,109		
26 Pure	leirs, No. 9	499	Robinson-1	981	15	403	1,087		
27 Pure	leirs, No. 10	499	Robinson-2	940	17	362	1,108		
28 Pure	leirs, No. 11	499	Robinson-3	940	17	411	1,098		
29 Pure	leirs, No. 12	499	Robinson-4	986	18	487	1,013		
30 Pure	leirs, No. 13	499	Robinson-3	986	10	446	1,054		
31 Pure	leirs, No. 14	499	Robinson-4	998	18	404	1,066		
32 Pure	leirs, No. 15	499	Robinson-1	986	6	386	1,112		
33 Pure	leirs, No. 16	499	Robinson-3	928	30	430	1,070		
34 Pure	leirs, No. 17	499	Robinson-2	933		411	1,060	940	Dry No record
35 Pure	leirs, No. 18	499	Robinson-1	912	16	386	1,114		Well abandoned
36 Pure	leirs, No. 19	499	Robinson-2	948	14	422	1,078	966	
37 Pure	leirs, No. 20	499	Robinson-1	980	27	377	1,123	960	
38 Pure	leirs, No. 21	499	Robinson-2	986	24	423	1,077	980	
39 Pure	leirs, No. 22	499	Robinson-3	976	22	460	1,040	968	
40 Pure	leirs, No. 23	499	Stray	1,038	17	408	1,038		Salt water, 1,004 feet.
41 Pure	leirs, No. 24	499	Stray	1,087	8	571	926	1,057	No record

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
23—N. E..	8	Morrison.....	Martin, No. 2.....	498	Robinson-1.....	905	45	407	1,093	915	50	.....
	9	Morrison.....	Martin, No. 3.....	500	do.....	909	10	409	1,091	.....	.....	.....
N. W..	1	Ohio.....	Reed, No. 8.....	501	Robinson-3.....	963	23	437	1,033	.....	50	.....
	2	Ohio.....	Reed, No. 9.....	492	Stray.....	915	5	463	1,037	.....	.....	Gas, 917 feet.
	3	Ohio.....	Reed, No. 7.....	500	Robinson-2.....	930	7	414	1,086	917	80	.....
	4	Ohio.....	Reed, No. 4.....	484	Robinson-2.....	930	10	429	1,071	934	.....	No record. Well aban-
	5	Parker-Crowly.....	Crowly, No. 1.....	490	.....	.....	.....	.....	.....	.....	.....	done.
	6	Parker-Crowly.....	Crowly, No. 3.....	496	Robinson-1.....	868	.....	.....	.....	.....	Dry	No record.
	7	Parker-Crowly.....	Crowly, No. 2.....	500	do.....	875	20	385	1,115	.....	5	Well abandoned.
	8	Parker-Crowly.....	Crowly, No. 4.....	500	Robinson-2.....	908	47	418	1,082	975	.....	.....
	9	Parker-Edwards.....	Crowly, No. 1.....	485	Stray.....	935	10	414	1,086	952	.....	.....
	10	Parker-Edwards.....	Crowly, No. 2.....	492	Robinson-2.....	920	5	439	1,061	930	.....	Gas, 926 feet.
	11	Wark.....	Dennis, No. 4.....	484	do.....	920	21	420	1,080	950	.....	Salt water, 948 feet.
N. W..	12	Ohio.....	C. T. Stewart, No. 4.....	482	Robinson-1.....	860	57	376	1,124	.....	75	.....
	13	Ohio.....	C. T. Stewart, No. 1.....	474	Robinson-3.....	932	18	448	1,052	964	.....	.....
	14	Ohio.....	C. T. Stewart, No. 5.....	478	Robinson-1.....	874	6	392	1,108	.....	80	Gas, 930 feet.
	15	Ohio.....	C. T. Stewart, No. 3.....	487	Robinson-3.....	919	22	437	1,063	932	60	Gas, 912 feet.
	16	Ohio.....	C. T. Stewart, No. 2.....	491	Robinson-2.....	875	17	401	1,099	902	.....	.....
	17	Ohio.....	Sparks, No. 1.....	498	Robinson-1.....	849	35	371	1,129	876	50	Gas, 876 feet.
	18	Ohio.....	Sparks, No. 2.....	504	do.....	899	.....	391	1,109	.....	300	Gas, 895 feet.
	19	Ohio.....	Sparks, No. 3.....	482	Robinson-3.....	888	.....	401	1,099	936	45	Gas, 930 feet.
	20	Ohio.....	Sparks, No. 2.....	504	do.....	935	.....	444	1,056	940	45	Gas, 936 feet.

20	Ohio.....	Sparks, No. 4.....	491	do.....	920	21	429	1,071	932	100	Gas, 924 feet.....
21	Ohio.....	Sparks, No. 5.....	497	Stray.....	911	6	414	1,066	914	40	Gas, 935 feet.....
1	Red Bank.....	Mitchell, No. 3.....	489	Robinson-2.....	934	6	437	1,063	938	500	.....
2	Red Bank.....	Mitchell, No. 2.....	496	Robinson-1.....	855	14	366	1,134	.....	20	.....
3	Red Bank.....	Mitchell, No. 1.....	490	Robinson-2.....	884	17	395	1,105	.....	250	.....
4	Ohio.....	do.....	490	Robinson-3.....	930	41	434	1,066	.....	.....	.....
5	Ohio.....	Mitchell, No. 2.....	493	Robinson-1.....	870	21	380	1,120	887	.....	.....
6	Ohio.....	Mitchell, No. 3.....	496	Robinson-2.....	894	10	404	1,066	.....	.....	.....
7	Ohio.....	McColpin, No. 7.....	494	Robinson-3.....	930	7	440	1,060	.....	.....	.....
8	Ohio.....	McColpin, No. 9.....	500	Robinson-1.....	867	.....	374	1,128	.....	.....	.....
9	Ohio.....	McColpin, No. 13.....	495	Robinson-3.....	937	.....	444	1,066	937	.....	.....
10	Ohio.....	McColpin, No. 19.....	494	Robinson-3.....	.....	.....	443	1,067	.....	Dry	No record
11	Ohio.....	McColpin, No. 15.....	493	Robinson-1.....	937	.....	443	1,057	940	150	Gas, 938 feet.....
12	Pure.....	Stewart Helrs, No. 3.....	503	Robinson-1.....	882	24	382	1,118	1,023	Dry	.....
13	Pure.....	Stewart Helrs, No. 4.....	515	do.....	861	.....	366	1,134	867	25	Gas, 863 feet . Salt water, 995 feet.....
14	Pure.....	Stewart Helrs, No. 5.....	513	Robinson-2.....	.....	.....	.....	.....	.....	60	Gas, 872 feet.....
15	Pure.....	Stewart Helrs, No. 6.....	509	Robinson-3.....	.....	56	373	1,127	886	75	.....
16	Pure.....	Stewart Helrs, No. 2.....	498	Robinson-1.....	866	15	352	1,148	.....	.....	.....
17	Pure.....	Stewart Helrs, No. 1.....	499	Robinson-2.....	855	23	427	1,073	957	.....	.....
18	Peoples Oil and Gas Co ..	Hopkins (lower 40), No. 4.....	497	Robinson-3.....	930	4	383	1,117	.....	25	.....
19	Peoples Oil and Gas Co ..	Hopkins (lower 40), No. 3.....	499	Robinson-2.....	898	21	405	1,095	975	50	.....
20	Peoples Oil and Gas Co ..	Hopkins (lower 40), No. 5.....	499	Robinson-3.....	920	17	367	1,133	897	.....	.....
21	Peoples Oil and Gas Co ..	Hopkins (lower 40), No. 2.....	504	Robinson-1.....	880	26	381	1,119	.....	.....	.....
22	Peoples Oil and Gas Co ..	Hopkins (lower 40), No. 1 ..	498	do.....	890	7	419	1,081	.....	.....	.....
1	Smith, Neely & Kerr .....	Shipman, No. 1.....	509	Robinson-2.....	928	25	493	1,007	1,027	30	.....
2	Smith, Neely & Kerr .....	Shipman, No. 2.....	521	Robinson-4.....	1,002	3	404	1,066	.....	.....	.....
3	Crescent.....	Hooker, No. 3.....	526	Robinson-1.....	902	4	492	1,008	.....	.....	.....
4	Crescent.....	Hooker, No. 2 .....	513	Robinson-4.....	990	2	547	953	.....	.....	.....
5	Crescent.....	Hooker, No. 1 .....	516	Robinson-3.....	1,045	3	611	889	1,122	Dry	No record
6	Crescent.....	Hooker, No. 4.....	517	Stray.....	1,109	.....	.....	.....	.....	.....	.....
				Robinson-1.....	895	25	398	1,102	.....	.....	.....
				Robinson-4.....	981	21	484	1,016	.....	.....	.....
				Robinson-1.....	890	24	391	1,109	.....	.....	.....
				Robinson-3.....	962	20	463	1,037	.....	.....	.....
				Robinson-1.....	891	15	392	1,108	.....	.....	.....
				Robinson-3.....	940	7	441	1,059	.....	.....	.....
				Robinson-4.....	986	18	467	1,013	.....	.....	.....
				Robinson-3.....	950	10	446	1,054	.....	.....	.....
				Robinson-4.....	998	18	494	1,008	.....	.....	.....
				Robinson-1.....	886	6	388	1,112	.....	.....	.....
				Robinson-3.....	928	30	430	1,070	.....	.....	.....
				Robinson-2.....	932	.....	411	1,069	940	Dry	No record
				Robinson-1.....	912	18	386	1,114	.....	Light	Well abandoned
				Robinson-2.....	948	14	422	1,078	966	.....	.....
				Robinson-1.....	890	27	377	1,123	890	.....	.....
				Robinson-2.....	966	24	423	1,077	960	.....	.....
				Robinson-3.....	976	23	460	1,040	998	.....	.....
				Stray.....	1,038	10	522	978	1,038	.....	Salt water, 1,004 feet.....
				Stray.....	1,087	8	571	929	1,087	.....	Well abandoned
					.....	.....	.....	.....	.....	.....	No record

S. W...

S. E...



## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
23— S. E...	7	Crescent.....	Hooker, No. 5.....	512	Robinson-1.....	855	.....	343	1,157	.....	.....	No record.....
	8	Ohio.....	Hooker, No. 2.....	512	Robinson-3.....	950	10	438	1,062	966	25	.....
	9	Ohio.....	Hooker, No. 3.....	524	Robinson-1.....	916	6	392	1,108	980	Light	.....
	10	Ohio.....	Hooker, No. 4.....	524	do.....	918	6	394	1,106	981	.....	.....
	11	Ohio.....	Hooker, No. 1.....	524	do.....	919	30	395	1,105	.....	.....	.....
					Robinson-3.....	966	17	442	1,058	983	.....	.....
	1	Ohio.....	O. Mann, No. 1.....	529	Robinson-1.....	918	20	389	1,111	.....	.....	.....
					Robinson-3.....	980	.....	451	1,049	.....	Dry	Salt water, 990 feet.....
	1	Ohio.....	Morrison, No. 1.....	522	Robinson-1.....	935	15	413	1,087	.....	.....	.....
	2	Ohio.....	Morrison, No. 2.....	525	Robinson-2.....	953	10	431	1,069	.....	.....	.....
	3	Morrison.....	Weirich, No. 1.....	517	do.....	958	5	433	1,067	.....	25	.....
24— N. E.. N. W..	3	Morrison.....	Weirich, No. 1.....	517	Robinson-1.....	911	.....	394	1,106	.....	.....	.....
	4	Morrison.....	Weirich, No. 4.....	527	Robinson-1.....	921	83	404	1,096	.....	50	.....
	5	Morrison.....	Weirich, No. 3.....	523	do.....	920	49	393	1,107	932	50	Gas, 920 feet.....
	6	Morrison.....	Weirich, No. 2.....	522	Robinson-2.....	922	.....	399	1,101	.....	50	Gas, 922 feet.....
					Robinson-1.....	950	21	427	1,073	.....	.....	.....
					Robinson-2.....	912	14	390	1,110	.....	.....	.....
					Robinson-3.....	936	.....	414	1,086	.....	50	.....
	1	Morrison.....	Butler, No. 2.....	523	Robinson-1.....	970	.....	448	1,052	.....	.....	.....
	2	Morrison.....	Butler, No. 1.....	523	Robinson-2.....	925	8	402	1,098	982	3	.....
	3	Morrison.....	Butler, No. 3.....	508	Robinson-3.....	921	29	459	1,041	.....	200	.....
	4	Morrison.....	Butler, No. 4.....	518	do.....	940	.....	398	1,102	940	Show	Gas, 922 feet.....
S. W..	5	Red Bank.....	Dyar, No. 1.....	514	Robinson-1.....	923	15	414	1,086	930	.....	.....
	6	Red Bank.....	Dyar, No. 2.....	506	Robinson-3.....	907	.....	455	1,045	963	14	.....
					Robinson-3.....	979	5	389	1,111	.....	25	.....

S. E.
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N. E.
N. W.

## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
25— N W.	10	Mahutska.....	H. Weirich, No. 4.....	508	Robinson-1.....	866	15	358	1,142	.....	.....	.....
	11	Mahutska.....	H. Weirich, No. 10.....	503	Robinson-2.....	923	46	415	1,085	.....	150	.....
	12	Mahutska.....	H. Weirich, No. 9.....	484	Robinson-1.....	835	25	332	1,168	.....	.....	.....
	13	Mahutska.....	H. Weirich, No. 1.....	498	Robinson-2.....	920	28	417	1,083	.....	.....	.....
	14	Mahutska.....	H. Weirich, No. 7.....	479	Robinson-1.....	820	27	336	1,164	832	.....	.....
	1	Red Bank.....	Smith, No. 3.....	483	Robinson-2.....	903	35	419	1,081	.....	.....	.....
	2	Red Bank.....	Smith, No. 2 "B".....	473	Robinson-1.....	842	13	344	1,156	.....	.....	.....
	3	Red Bank.....	Smith, No. 1 "B".....	473	Robinson-2.....	914	32	416	1,084	.....	150	.....
	4	Red Bank.....	Maxwell, No. 3.....	486	Robinson-1.....	824	14	345	1,155	.....	.....	.....
	5	Red Bank.....	Maxwell, No. 1.....	490	Robinson-2.....	988	60	409	1,091	.....	150	.....
	6	Red Bank.....	Maxwell, No. 2.....	490	.....	.....	.....	.....	.....	.....	No record.	.....
	7	Red Bank.....	Maxwell, No. 4.....	488	Robinson-1.....	815	11	342	1,158	.....	.....	.....
	8	Ohio.....	Smith, No. 1.....	469	Robinson-2.....	902	25	429	1,071	.....	50	.....
	9	Ohio.....	Smith, No. 2.....	480	Stray.....	795	22	322	1,178	.....	.....	.....
S W.	10	Ohio.....	Maxwell, No. 1.....	483	Robinson-1.....	842	32	369	1,131	.....	.....	.....
	11	Ohio.....	Maxwell, No. 2.....	484	Robinson-1.....	830	10	344	1,156	.....	.....	.....
	12	Ohio.....	Maxwell, No. 3.....	483	Robinson-2.....	912	15	426	1,074	912	10	.....
					Stray.....	785	24	295	1,205	.....	.....	.....
					Robinson-1.....	852	12	362	1,138	.....	25	.....
					Stray.....	815	15	325	1,175	820	25	.....
					Robinson-2.....	906	10	416	1,084	.....	.....	.....
					Robinson-1.....	830	8	342	1,158	.....	60	.....
					Robinson-3.....	918	18	430	1,070	.....	.....	.....
					Robinson-1.....	808	30	339	1,161	.....	.....	.....
					Robinson-2.....	885	22	416	1,084	.....	.....	.....
					Robinson-3.....	902	23	422	1,078	.....	100	.....
					do.....	906	7	423	1,077	.....	.....	.....
					Robinson-1.....	820	26	336	1,164	832	.....	.....
					Robinson-2.....	895	9	411	1,089	.....	.....	.....
					Robinson-1.....	859	4	376	1,124	.....	.....	.....
					Robinson-2.....	910	13	427	1,073	.....	.....	.....

13	Ohio	Maxwell, No. 4	486	do	891	13	405	1,095					
14	Whittaker	Doucummen, No. 1	477	Robinson-3	937	18	451	1,049				15	No record
15	Whittaker	Doucummen, No. 2	464										do
16	Whittaker	Doucummen, No. 3	465										do
17	Whittaker	Doucummen, No. 4	461										do
18	Whittaker	Doucummen, No. 5	481										do
19	Whittaker	Doucummen, No. 7	464										do
20	Morrison	C. Doucummen, No. 1	477	Robinson-1	814	27	337	1,163					
21	Morrison	C. Doucummen, No. 4	485	Robinson-3	917	19	440	1,080				100	
22	Morrison	C. Doucummen, No. 8	484	Robinson-1	834	32	349	1,151				40	
23	Morrison	C. Doucummen, No. 3	472	do	849	20	365	1,135					
24	Morrison	C. Doucummen, No. 5	480	Robinson-2	895		411	1,089					
25	Morrison	C. Doucummen, No. 6	475	Robinson-3	907	8	423	1,077				Dry	
1	American Oil & Development Co	Richart, No. 7	474	Robinson-1	815		343	1,157					
2	American Oil & Development Co	Richart, No. 23	480	Robinson-2	875	18	403	1,097				300	
3	Reel	Coulter, No. 2	489	Robinson-1	824	36	344	1,156				50	
4	Reel	Coulter, No. 3	488	Robinson-2	824		349	1,151					
1	Ohio	Dyar, No. 2	511	do	842	18	367	1,133				50	
2	Ohio	Dyar, No. 1	490	Robinson-1	822		348	1,152				50	
3	Ohio	Dyar, No. 7	491	do	849	27	369	1,131				24	Coal, 695 feet. Gas, 710 feet. Salt water, 710 feet.
4	Ohio	Dyar, No. 5	505	Shallow	700	8	211	1,289					
5	Ohio	Dyar, No. 3	508	Robinson-3	940	10	451	1,049					
6	Ohio	Dyar, No. 4	514	Robinson-4	964		465	1,035					
7	Ohio	Dyar, No. 6	515	Robinson-1	870	12	382	1,118					
8	Crawford & Milligan	J. Wright, No. 17	514	Robinson-2	922		434	1,066					Gas, 870 feet. Salt water, 968 feet. Well abandoned.
9	Crawford & Milligan	J. Wright, No. 14	510	Robinson-3									
10	Crawford & Milligan	J. Wright, No. 10	510	Robinson-1									
11	Crawford & Milligan	J. Wright, No. 9	513	Robinson-2								Show	

S. E...

26- N. E...

## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation feet	Sand				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
26— N E.	12	Red Bank	H mblin, No 1 "R. B."	508	Robison-1	853	17	345	1,156	.....	.....	.....
	13	Red Bank	Hamblin, No. 2 "R. B."	508	Robison-2	891	15	383	1,117	.....	100	.....
	14	Red Bank	Hamblin, No. 1 "B."	499	Robison-1	847	36	341	1,159	.....	.....	.....
	15	Ohio	Hamblin, No. 1 "B."	499	do	849	8	349	1,151	.....	.....	.....
	16	Ohio	Cullison-Wagner, No. 3	504	Robison-2	884	16	385	1,115	.....	No record	.....
	17	Ohio	Cullison-Wagner, No. 1	494	.....	877	24	359	1,109	.....	Gas, 830 feet.	.....
	17	Ohio	Cullison-Wagner, No. 2	494	.....	880	23	354	1,114	.....	60	.....
	18	Red Bank	Weirich, No. 1	503	.....	897	34	320	1,102	.....	.....	.....
	19	Red Bank	Weirich, No. 2	504	.....	895	31	323	1,104	.....	.....	.....
	20	Wabash	Weirich, No. 1	496	.....	848	50	345	1,135	.....	100	Gas 846 feet.
	21	Ohio	Weirich, No. 5	498	.....	846	37	343	1,067	.....	.....	.....
	22	Ohio	Weirich, No. 1	497	.....	879	4	347	1,133	.....	Gas, 845 feet.	.....
	23	Ohio	Weirich, No. 3	495	.....	925	23	321	1,119	.....	150	.....
	24	Ohio	Weirich, No. 6	498	.....	910	43	327	1,073	.....	.....	.....
	25	Ohio	Weirich, No. 2	509	.....	905	30	410	1,080	.....	200	No record.
	26	Ohio	Weirich, No. 4	498	.....	827	8	318	1,123	.....	300	Gas, 830 feet.
N W	1	Crawford & Mulligan	J. Wright, No. 8	515	.....	835	16	327	1,173	.....	110	.....
	2	Crawford & Mulligan	J. Wright, No. 5	508	.....	840	14	394	1,103	.....	.....	.....
	3	Crawford & Mulligan	J. Wright, No. 13	510	.....	852	2	326	1,178	.....	.....	.....
					.....	907	12	392	1,133	.....	.....	.....
					.....	853	7	343	1,137	.....	No record.	.....
					.....	853	23	373	1,136	.....	.....	.....



## Crawford County—Honey Creek Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Total depth—feet.	Oil depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
6— N. W.	11	Ohio.....	G. Kersey, No. 1.....	464	Robinson-1.....	814	26	350	1,150	820	.....	Gas, 814 feet.....
	12	Ohio.....	G. Kersey, No. 2.....	462	Robinson-3.....	885	17	421	1,079	890	50	.....
	13	Riddle.....	Mann, No. 20.....	470	Robinson-2.....	855	11	393	1,107	880	25	Gas, 855 feet.....
	14	Riddle.....	Mann, No. 15.....	477	Robinson-3.....	885	15	423	1,077	890	.....	.....
	15	Riddle.....	Mann, No. 10.....	488	Robinson-1.....	835	6	365	1,135	.....	.....	.....
	16	Riddle.....	Mann, No. 9.....	496	Robinson-2.....	885	30	415	1,085	.....	500	.....
	1	Ohio.....	Frost, No. 1.....	484	Robinson-1.....	851	32	374	1,126	.....	Show	.....
	2	Devonian.....	Frost, No. 1.....	481	Robinson-3.....	918	28	441	1,059	.....	.....	.....
	3	Devonian.....	Frost, No. 4.....	497	Robinson-1.....	864	19	376	1,124	869	.....	.....
	4	Devonian.....	Frost, No. 2.....	487	Robinson-2.....	925	15	437	1,063	.....	.....	.....
	5	Devonian.....	Frost, No. 3.....	492	Robinson-1.....	866	10	370	1,130	.....	.....	.....
	1	Treat, Crawford & Treat.	Boyd, No. 8.....	483	Robinson-3.....	958	28	462	1,038	.....	40	.....
	2	Treat, Crawford & Treat.	Boyd, No. 9.....	506	.....	1,203	.....	719	781	.....	Dry	Salt water.....
	3	Treat, Crawford & Treat.	Boyd, No. 5.....	494	Robinson-1.....	845	.....	364	1,136	.....	.....	.....
	4	Treat, Crawford & Treat.	Boyd, No. 4.....	481	Robinson-2.....	920	5	439	1,061	.....	.....	.....
S. E.	5	Ohio.....	Boyd, No. 1.....	481	Robinson-3.....	945	13	464	1,036	951	.....	Salt water, 958 feet.....
	6	Ohio.....	Boyd, Hrs. No. 2.....	488	Robinson-1.....	845	22	348	1,152	.....	Dry	Gas, 845 feet.....
	7	Ohio.....	Boyd, Hrs. No. 3.....	482	Robinson-2.....	934	46	437	1,063	.....	Gas	Gas, 938 feet.....
					Robinson-1.....	859	12	372	1,128	.....	Show	.....
					Robinson-2.....	876	43	389	1,111	.....	.....	.....
					Robinson-1.....	857	7	365	1,135	.....	.....	.....
					Robinson-2.....	869	148	377	1,123	.....	Light	.....
					Robinson-1.....	863	40	380	1,120	870	.....	.....
					.....	.....	.....	.....	.....	.....	.....	.....
					Robinson-1.....	864	46	370	1,130	.....	Dry	No sands.....
					..do.....	855	55	374	1,126	864	Light	Well abandoned.....
					..do.....	845	.....	364	1,136	.....	20	Gas, 845 feet.....
					Robinson-3.....	920	.....	439	1,061	.....	Dry	Salt water.....
					Robinson-1.....	860	15	372	1,128	862	20	.....
					Robinson-2.....	887	13	405	1,095	887	25	.....





## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
26— S. E...	21	Whitaker	Doucummen, No. 4	487	Shallow	475	5	+12	1,512				
					Robinson-2	898		411	1,089				
					Robinson-3	921	33	434	1,066	921			
	22	Whitaker	Doucummen, No. 3	486	Robinson-2	895		409	1,091				
					Robinson-3	920	20	434	1,066	940			Quit in sand
	23	Whitaker	Doucummen, No. 2	487	Robinson-2	895		408	1,092				
					Robinson-3	918	26	431	1,069	918			Quit in sand
	24	Whitaker	Doucummen, No. 1	486	Robinson-1	820	10	334	1,166				
					Robinson-3	920	20	434	1,066	940			Quit in sand
	25	Ohio	Fry, No. 1	482	Robinson-1	818	20	336	1,164				
					Robinson-3	896	22	414	1,086				
	26	Ohio	Fry, No. 2	484	Robinson-1	822		338	1,162				
					Robinson-3	914	14	340	1,153	920			
	27	Ohio	Fry, No. 3	488	Robinson-1	835	27	347	1,153				
					Robinson-3	920	12	432	1,068			100	Gas, 820 feet
27— N. E...	28	Ohio	Fry, No. 4	485	Robinson-1	820	12	335	1,165				
					Robinson-3	895	25	410	1,090	900			Gas, 830 feet
	29	Ohio	Fry, No. 5	481	Robinson-1	830	15	349	1,151				
					Robinson-3	899	13	418	1,082	900			
	30	Red Bank	Fry, No. 2 "R B"	484	Robinson-1	810	30	326	1,174				
					Robinson-2	874	16	390	1,110			100	
	31	Red Bank	Fry No. 2 "B"	477	Robinson-1	832		355	1,145				
					Robinson-2	882	30	405	1,095	882			
	32	Red Bank	Fry, No. 1 "B"	487	Robinson-1	824		337	1,163				
					Robinson-2	900	24	413	1,087	902		75	
	33	Red Bank	Fry, No. 3 "B"	478	Robinson-1	812	13	334	1,166				
					Robinson-2	888	38	410	1,090				
	34	Red Bank	Fry, No. 1 "R B"	479	Robinson-1	825		346	1,154				Gas, 830 feet
					Robinson-3	901	19	422	1,078	915			
	1	Ohio	McColpin, No. 16	489	Robinson-1	835	5	346	1,154				Gas, 946 feet
	2	Ohio	McColpin, No. 14	482	Robinson-3	943	32	454	1,046	946			Gas, 862 feet
					Robinson-2	855	39	373	1,127			120	Gas, 862 feet

3	Ohio.....	McColpin, No. 11.....	485	..do.....	863	.....	378	1,122	870	.....	70	.....
4	Ohio.....	McColpin, No. 10.....	491	..do.....	860	.....	369	1,131	872	.....	100	Gas, 870 feet.....
5	Parker-Edwards.....	Thompson, No. 1.....	486	Shallow.....	460	.....	+26	1,526	.....	.....	.....	.....
6	Parker-Edwards.....	Thompson, No. 2.....	484	Robinson-1.....	838	.....	352	1,148	.....	895	.....	.....
7	Parker-Edwards.....	Thompson, No. 4.....	480	Robinson-2.....	859	30	373	1,127	.....	.....	.....	.....
8	Parker-Edwards.....	Thompson, No. 7.....	481	Shallow.....	465	20	+19	1,519	.....	.....	.....	.....
9	Parker-Edwards.....	Thompson, No. 8.....	486	Robinson-2.....	862	.....	378	1,122	.....	.....	.....	.....
10	Ohio.....	Thompson, No. 1.....	482	Robinson-2.....	886	26	402	1,088	.....	.....	.....	.....
11	Ohio.....	Thompson, No. 2.....	484	Stray.....	805	.....	325	1,175	.....	.....	.....	.....
12	North Fork.....	G. Walker, No. 4.....	487	Robinson-2.....	861	.....	381	1,119	.....	912	.....	.....
13	North Fork.....	G. Walker, No. 9.....	487	Shallow.....	447	28	+34	1,534	.....	.....	.....	.....
14	North Fork.....	G. Walker, No. 5.....	486	..do.....	449	24	+37	1,537	.....	476	.....	.....
15	North Fork.....	G. Walker, No. 8.....	487	Robinson-2.....	847	18	365	1,135	.....	.....	.....	.....
16	North Fork.....	G. Walker, No. 10.....	478	Robinson-3.....	935	46	453	1,047	.....	.....	25	.....
17	North Fork.....	G. Walker, No. 2.....	488	Robinson-2.....	847	31	363	1,137	.....	.....	Dry	.....
18	North Fork.....	G. Walker, No. 1.....	482	Robinson-1.....	806	44	319	1,181	.....	.....	.....	.....
19	Ohio.....	McColpin, No. 8.....	486	Robinson-2.....	860	40	373	1,127	.....	.....	.....	.....
20	Ohio.....	McColpin, No. 12.....	489	Robinson-1.....	834	.....	347	1,153	.....	.....	.....	Gas, 852, feet.....
21	Ohio.....	McColpin, No. 17.....	487	Robinson-2.....	898	.....	411	1,089	898	917	.....	.....
22	Ohio.....	McColpin, No. 18.....	484	Robinson-1.....	848	.....	362	1,138	862	.....	.....	.....
1	Bruner.....	Hughes, No. 4.....	482	Robinson-2.....	885	24	399	1,101	.....	933	.....	.....
2	Bruner.....	Hughes, No. 1.....	462	Robinson-1.....	834	.....	347	1,153	.....	.....	.....	Salt water, 859 feet.....
3	Bruner.....	Hughes, No. 5.....	473	Robinson-2.....	845	.....	558	1,142	.....	.....	.....	.....
4	Bruner.....	Hughes, No. 2.....	473	..do.....	860	17	382	1,118	.....	896	.....	.....
5	Bruner.....	Hughes, No. 10.....	478	Stray.....	815	.....	327	1,173	.....	.....	.....	.....
6	Bruner.....	Hughes, No. 7.....	481	Robinson-2.....	840	45	352	1,148	.....	.....	Pay	.....
7	Bruner.....	Hughes, No. 9.....	478	Shallow.....	430	35	+52	1,552	.....	.....	.....	.....
8	Bruner.....	Hughes, No. 3.....	486	Stray.....	810	12	328	1,172	.....	.....	Pay	.....
9	Bruner.....	Hughes, No. 6.....	485	Robinson-3.....	886	19	404	1,096	.....	.....	.....	.....
				Robinson-1.....	935	19	453	1,047	.....	.....	.....	.....
				..do.....	952	.....	466	1,034	.....	.....	10	Gas, 854 feet.....
				Robinson-2.....	863	.....	374	1,126	.....	.....	150	Gas, 865 feet.....
				Robinson-1.....	850	18	363	1,137	855	.....	60	Gas, 855 feet.....
				Robinson-3.....	941	17	457	1,043	943	.....	75	Gas, 943 feet.....
				Robinson-2.....	903	6	421	1,079	.....	.....	Dry	Salt water, 980 feet. Gas, 940 feet.....
				Robinson-3.....	940	.....	458	1,042	.....	.....	.....	.....
				Robinson-2.....	858	32	396	1,104	858	.....	.....	.....
				Robinson-1.....	840	20	367	1,133	.....	.....	.....	.....
				Robinson-2.....	900	.....	427	1,073	947	962	.....	.....
				Robinson-1.....	818	18	345	1,155	.....	.....	.....	.....
				Robinson-3.....	932	25	459	1,041	947	957	.....	.....
				Robinson-1.....	830	15	352	1,148	830	.....	.....	.....
				Robinson-3.....	915	50	437	1,063	925	967	.....	Gas, 822 feet.....
				Robinson-1.....	822	.....	341	1,159	.....	.....	.....	.....
				Robinson-2.....	840	39	359	1,141	840	892	.....	.....
				Robinson-2.....	880	15	402	1,098	882	.....	.....	.....
				Robinson-3.....	932	5	454	1,046	.....	963	.....	Quit in sand.....
				Stray.....	812	10	326	1,174	.....	.....	.....	.....
				Robinson-2.....	850	36	364	1,136	855	890	.....	.....
				Robinson-1.....	831	50	346	1,154	853	888	.....	.....

N. W..

## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
27— N. W.	10	Bruner.	Hughes, No. 8.	482	Stray.	822	6	340	1,160	834		
					Robinson-1.	834	20	352	1,148	870		
					Robinson-2.	870	15	388	1,112	891		
					Shallow.	432	5	+46	1,546		Good	
					do.	458	15	+20	1,520			
					Robinson-3.	975	50	497	1,003			
					do.	958	42	482	1,018			
					Shallow.	567		90	1,410		Dry	
					Robinson-4.	985	60	525	975			
					Robinson-3.	965	40	492	1,008			
					do.	946	60	473	1,027			
					do.	945	65	476	1,024			
					do.	974	6	499	1,001	975	10	Gas, 975 feet. Salt water, 999 feet.
					Robinson-2.	910	10	437	1,063			
					Robinson-3.	942	23	469	1,031			
					Robinson-1.	849	27	375	1,125			
					Robinson-2.	894	11	420	1,080			
					do.	900	20	421	1,079	905	150	Gas, 901 feet.
					do.	874		412	1,088	874	300	Gas, 874 feet.
S. W.					Stray.	816		344	1,156			
					Robinson-2.	880		408	1,092	880	200	Gas, 880 feet.
					do.	880	32	403	1,097	865	75	Gas, 865 feet.
					Robinson-1.	852		375	1,125	854	100	Gas, 840 feet.
					do.	840		368	1,132	845	50	Gas, 840 feet.
					do.	850	26	371	1,129	860		Gas, 855 feet.
					Robinson-2.	881	25	402	1,098		200	Gas, 864 feet.
					Robinson-1.	863	37	393	1,107	867	300	Gas, 851 feet.
					do.	851		372	1,128	860	400	Gas, 851 feet.
					Shallow.	447	27	+24	1,524	455	100	Gas, 450 feet. Salt water, 474 feet.
	10	Ohlo.	C. Dennis, No. 6.	470	Robinson-2.	871	37	401	1,099	880	500	Gas, 873 feet.





25 North Fork.....	Hicks, No. 8.....	495 {	Stray Robinson-1.....	839 872	16	344 377	1, 156 1, 123	842 878	.....	Gas, 896 feet. Salt water, 906 feet.....
26 North Fork.....	Hicks, No. 9.....	498 {	Stray.....	845	27	347	1, 153	.....	.....	.....
			Robinson-1.....	877	10	379	1, 121	.....	.....	.....
			Robinson-2.....	890	21	392	1, 108	.....	.....	.....
			Robinson-3.....	920	20	422	1, 078	.....	.....	Salt water.....
27 North Fork.....	Hicks, No. 10.....	495 {	Stray.....	850	20	355	1, 145	.....	.....	.....
			Robinson-1.....	883	23	388	1, 112	.....	.....	.....
			Robinson-2.....	911	12	416	1, 084	.....	.....	.....
			Robinson-3.....	928	27	433	1, 067	.....	.....	.....
28 North Fork.....	Hicks, No. 13.....	493 {	Robinson-1.....	865	8	372	1, 128	.....	.....	.....
			Robinson-2.....	880	7	387	1, 113	.....	.....	.....
			Robinson-3.....	920	20	427	1, 073	962	.....	.....
1 Mahutska.....	Carleton, No. 7.....	474 {	Robinson-1.....	857	22	383	1, 117	.....	.....	.....
2 Mahutska.....	Carleton, No. 1.....	465 {	Robinson-2.....	913	12	439	1, 061	.....	200	.....
3 Mahutska.....	Carleton, No. 4.....	456 {	do.....	885	37	420	1, 080	.....	20	.....
			Robinson-1.....	844	11	388	1, 112	.....	.....	.....
			Robinson-2.....	876	27	419	1, 061	.....	200	.....
4 Mahutska.....	Carleton, No. 5.....	473 {	Robinson-1.....	865	38	392	1, 108	.....	.....	.....
			Robinson-2.....	906	34	433	1, 067	.....	.....	.....
5 Mahutska.....	Carleton, No. 6.....	458 {	Shallow.....	435	11	+23	1, 523	.....	100	.....
6 Mahutska.....	Carleton, No. 2.....	462 {	Robinson-3.....	918	27	460	1, 040	.....	200	.....
			Robinson-1.....	867	97	405	1, 085	.....	150	Sand, broken
7 Mahutska.....	Carleton, No. 3.....	462 {	do.....	868	6	406	1, 094	.....	Show	.....
			Robinson-2.....	895	11	433	1, 067	.....	.....	.....
			Robinson-3.....	918	14	456	1, 044	.....	250	.....
8 Mahutska.....	Carleton, No. 8.....	462 {	Robinson-1.....	873	6	411	1, 089	.....	.....	.....
			Robinson-2.....	890	60	428	1, 072	.....	.....	.....
9 Mahutska.....	Carleton, No. 9.....	474 {	Robinson-1.....	861	8	387	1, 113	.....	.....	.....
			Robinson-2.....	886	60	412	1, 088	.....	.....	.....
10 Mahutska.....	Carleton, No. 10.....	463 {	Robinson-1.....	851	12	388	1, 112	.....	.....	.....
			Robinson-3.....	908	22	445	1, 055	.....	Dry	.....
11 Homestead.....	Stewart, No. 5.....	469 {	Robinson-1.....	887	25	418	1, 082	887	.....	.....
			Robinson-3.....	872	.....	398	1, 102	.....	.....	.....
12 Homestead.....	Stewart, No. 6.....	474 {	Robinson-3.....	920	10	446	1, 054	.....	.....	.....
			Robinson-4.....	943	7	469	1, 031	960	Dry	.....
13 Homestead.....	Stewart, No. 7.....	477 {	Robinson-1.....	893	22	416	1, 084	.....	.....	.....
			Robinson-2.....	933	22	456	1, 044	.....	.....	.....
14 C. K. Brown.....	Stewart, No. 1.....	463 {	Robinson-3.....	982	12	505	1, 995	.....	Dry	Salt water, 976 feet. Well abandoned.....
			do.....	903	.....	440	1, 080	951	.....	.....
15 Bruner.....	To ill, No. 1.....	462 {	Stray.....	827	.....	365	1, 135	.....	.....	.....
			Robinson-1.....	847	18	385	1, 115	.....	.....	.....
			Robinson-3.....	947	15	485	1, 015	962	.....	Quit in sand.....
1 Ohlo.....	Bailey, No. 3.....	461 {	Robinson-1.....	870	23	409	1, 091	875	.....	.....
2 Ohlo.....	Bailey, No. 1.....	467 {	Robinson-3.....	935	24	474	1, 026	935	.....	.....
			do.....	938	.....	471	1, 029	940	100	Gas, 938 feet.....
3 Ohlo.....	Bailey, No. 5.....	468 {	Robinson-1.....	895	5	427	1, 073	.....	5	Gas, 918 feet.....
			Robinson-2.....	917	11	449	1, 051	920	.....	.....

## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
1— N. E...	20	Ohio.....	A. Kersey, No. 3.....	465 {	Robinson-1.....	818	22	353	1,147	820	400	Gas, 818 feet.....
	21	Ohio.....	E. Kersey, No. 2.....	466 {	Robinson-2.....	850	28	385	1,115	835	400	Gas, 832 feet.....
	22	Ohio.....	E. Kersey, No. 3.....	467 {	Robinson-1.....	850	14	384	1,136	860		
	23	Ohio.....	E. Kersey, No. 1.....	464 {	Robinson-2.....	800	20	384	1,116	860		
	24	Ohio.....	A. Kersey, No. 4.....	465 {	Stray.....	826	7	333	1,167	828		Gas, 826 feet.....
	25	Ohio.....	A. Kersey, No. 2.....	461 {	Robinson-2.....	888	13	362	1,138	890	300	Best production, 850 feet.
	26	Ohio.....	J. Hudson, No. 1.....	473 {	Robinson-3.....	828	34	424	1,076	850		
	27	Ohio.....	M. Kersey, No. 6.....	466 {	Robinson-2.....	894	8	363	1,137	895	50	Gas, 806 feet.....
	28	Hazelwood.....	Wilson, No. 2.....	450 {	Robinson-3.....	806	8	429	1,071	812		Best production, 885 feet.
	29	Hazelwood.....	Wilson, No. 4.....	451 {	Robinson-1.....	881	19	345	1,155	885	5	Gas, 800 feet.....
	30	Hazelwood.....	Wilson, No. 3.....	445 {	Robinson-3.....	800	30	420	1,080	820		Salt water, 898 feet.
	31	Hazelwood.....	Wilson, No. 5.....	455 {	Robinson-2.....	895	3	327	1,173	820		Well abandoned.....
	1	Red Bank.....	F. Frost, No. 1.....	442 {	Stray.....	785	6	319	1,181			Gas, 785 feet.....
	2	Red Bank.....	F. Frost, No. 4.....	442 {	Robinson-3.....	890	10	424	1,076	890	25	Salt water, 923 feet.....
	3	Ohio.....	F. Frost, No. 2.....	443 {	Robinson-1.....	785	23	335	1,165			
	4	Ohio.....	F. Frost, No. 1.....	445 {	Robinson-2.....	921	11	371	1,129	849		
N. W..					Stray.....	772	5	321	1,179			
					Robinson-1.....	800	18	349	1,151			Gas, 840 feet. Salt water, 900 feet.....
					Robinson-2.....	840	58	389	1,111	878		
					Robinson-1.....	782	33	337	1,163	825		
					Stray.....	782	18	327	1,173	785		
					Robinson-3.....	858	36	403	1,097	894		
					Robinson-1.....	783	23	341	1,159		100	
					do.....	767		325	1,175	770	100	
					do.....	775	12	332	1,168			Slate, 787 to 789 feet.....
					Stray.....	789	9	346	1,154	862		
					Robinson-1.....	785		350	1,150			No second lens.....
					Robinson-3.....	887		442	1,058		Dry	





## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
28— N. W.	4	Ohio.....	Bailey, No. 2.....	468 {	857	10	389	1,111	.....	907	.....	Salt water, 892 feet.
	5	Ohio.....	Bailey, No. 4.....	466 {	892	15	424	1,076	.....	905	.....	Gas, 905 feet.
	6	Ohio.....	Bailey, No. 7.....	466 {	905	5	439	1,061	.....	.....	50	.....
	7	Ohio.....	Bailey, No. 6.....	466 {	932	5	466	1,034	.....	.....	70	Gas, 879 feet.
	8	Ohio.....	Bailey, No. 8.....	458 {	877	26	411	1,089	880	.....	15	Gas, 862 feet.
				471 {	862	.....	404	1,096	864	.....	3	Gas, 972 feet. Salt water, 1002 feet.
					972	30	501	999	973	.....		
	9	McArthur.....	Bailey, No. 1.....	465 {	845	6	380	1,120	.....	915	Dry	.....
S. E.	10	Ohio.....	McColpin, No. 1.....	472 {	994	.....	522	978	.....	994	Dry	Salt water.
	1	Homestead.....	Stewart, No. 4.....	476 {	895	21	419	1,081	.....	.....	.....	.....
	2	Homestead.....	Stewart, No. 1.....	466 {	1,007	13	531	1,069	.....	1,039	Dry	Salt water, 1039 feet.
	3	Homestead.....	Stewart, No. 2.....	470 {	900	15	434	1,066	.....	.....	.....	Quit in sand.
					939	29	473	1,027	.....	968	.....	Salt water, 951 feet. Quit in sand.
					927	29	457	1,043	938	956	.....	.....
	4	Homestead.....	Stewart, No. 3.....	476 {	883	23	407	1,093	.....	.....	Show	.....
	5	Bruner.....	Tohill, No. 8.....	473 {	926	18	450	1,050	.....	944	.....	Quit in sand.
	6	Bruner.....	Tohill, No. 7.....	470 {	912	35	439	1,061	915	951	.....	.....
	7	Bruner.....	Tohill, No. 6.....	475 {	862	20	392	1,106	.....	.....	.....	Quit in sand.
	8	Bruner.....	Tohill, No. 5.....	476 {	898	.....	428	1,072	898	926	.....	Quit in sand.
					877	13	402	1,098	877	.....	.....	Quit in sand.
					916	.....	441	1,059	.....	935	.....	.....
					893	15	417	1,083	893	.....	.....	Salt water, 946 feet. Quit in sand.
					933	.....	457	1,043	935	946	.....	.....
	9	Bruner.....	Tohill, No. 4.....	472 {	856	10	384	1,116	384	.....	.....	.....
	10	Bruner.....	Tohill, No. 3.....	471 {	895	.....	423	1,077	423	933	.....	Quit in sand.
	11	Bruner.....	Tohill, No. 2.....	473 {	880	20	409	1,091	883	.....	.....	.....
					918	.....	447	1,053	923	941	.....	Quit in sand.
					882	25	409	1,091	887	.....	.....	.....
					926	17	453	1,047	926	943	.....	.....

12 Bruner.....	Pato, No. 1.....	471	Shallow.....	483	28	12	1,498	483	.....	.....	.....
13 Bruner.....	Pato, No. 2.....	475	Robinson-2.....	881	17	410	1,090	.....	.....	.....	.....
14 Bruner.....	Pato, No. 3.....	477	Robinson-3.....	918	23	447	1,053	920	.....	.....	.....
15 Bruner.....	Pato, No. 8.....	473	Robinson-2.....	886	20	411	1,089	891	.....	.....	.....
16 Bruner.....	Pato, No. 7.....	473	Robinson-3.....	934	21	459	1,041	.....	.....	.....	.....
17 Bruner.....	Pato, No. 5.....	474	Robinson-2.....	885	17	408	1,092	887	.....	.....	.....
18 Bruner.....	Pato, No. 10.....	476	Robinson-3.....	923	39	446	1,054	935	.....	.....	Salt water, 950 feet.
1 Bruner.....	Pato, No. 4.....	482	Robinson-2.....	909	24	436	1,064	910	.....	.....	.....
2 Bruner.....	Pato, No. 9.....	478	do.....	911	20	438	1,062	.....	.....	.....	.....
3 Bruner.....	Pato, No. 6.....	485	Robinson-3.....	969	12	496	1,004	.....	.....	.....	Salt water, 969 feet.
4 Bruner.....	Pato, No. 11.....	487	Robinson-2.....	901	23	427	1,073	905	.....	.....	.....
5 Treat, Crawford & Treat.	Fritz, No. 1.....	486	Robinson-3.....	942	17	468	1,032	944	.....	.....	Quit in sand.
6 Treat, Crawford & Treat.	Fritz, No. 2.....	480	Robinson-2.....	908	20	432	1,068	908	.....	.....	.....
1 McArthur.....	Murry, No. 1.....	477	Robinson-3.....	965	.....	489	1,011	968	.....	.....	.....
1 Bruner.....	Pato, No. 4.....	482	Robinson-1.....	887	27	405	1,095	887	.....	.....	.....
2 Bruner.....	Pato, No. 9.....	478	Robinson-2.....	916	15	438	1,062	918	.....	.....	.....
3 Bruner.....	Pato, No. 6.....	485	Robinson-1.....	887	27	402	1,098	890	.....	.....	.....
4 Bruner.....	Pato, No. 11.....	487	Robinson-2.....	901	21	414	1,086	901	.....	.....	.....
5 Treat, Crawford & Treat.	Fritz, No. 1.....	486	do.....	915	17	429	1,071	918	.....	.....	.....
6 Treat, Crawford & Treat.	Fritz, No. 2.....	480	Robinson-3.....	938	26	456	1,044	.....	.....	.....	.....
1 McArthur.....	Murry, No. 1.....	477	Robinson-3.....	955	17	478	1,022	972	.....	.....	Salt water, 972 feet.
1 North Fork.....	Hicks, No. 11.....	500	Robinson-3.....	947	8	447	1,053	.....	.....	.....	.....
2 North Fork.....	Hicks, No. 2.....	491	Robinson-4.....	957	39	457	1,043	.....	.....	.....	.....
3 North Fork.....	Hicks, No. 12.....	504	Robinson-1.....	876	5	385	1,115	.....	.....	.....	.....
4 North Fork.....	Hicks, No. 15.....	505	Robinson-2.....	893	11	402	1,098	.....	.....	.....	.....
5 North Fork.....	Hicks, No. 4.....	494	Robinson-3.....	914	31	423	1,077	.....	.....	.....	.....
6 North Fork.....	Hicks, No. 5.....	501	Stray.....	932	8	428	1,072	.....	.....	.....	.....
7 North Fork.....	Hicks, No. 6.....	505	Robinson-3.....	960	19	456	1,044	984	.....	.....	.....
8 North Fork.....	Hicks, No. 3.....	509	Robinson-1.....	848	14	343	1,157	.....	.....	.....	.....
9 Taylor.....	Town Lot, No. 1.....	504	Robinson-2.....	900	19	395	1,105	.....	.....	.....	Salt water.
10 Kohler.....	H. Casy Lot, No. 1.....	505	Robinson-4.....	988	5	483	1,017	993	.....	.....	.....
11 Unknown.....	N. Shipman, No. 1.....	503	Robinson-1.....	857	15	363	1,137	.....	.....	.....	.....
12 Unknown.....	I. Shipman, No. 2.....	500	Robinson-2.....	886	6	392	1,108	.....	.....	.....	.....
13 Unknown.....	I. Shipman, No. 1.....	497	Robinson-3.....	911	19	417	1,083	934	.....	.....	.....
14 Stephens, Hawkins & Steele.....	Waggoner, No. 1.....	494	Robinson-1.....	887	15	386	1,114	.....	.....	.....	.....
			Robinson-3.....	916	20	415	1,085	.....	.....	.....	.....
			Robinson-4.....	942	.....	441	1,059	960	.....	.....	.....
			Robinson-2.....	907	.....	402	1,098	917	.....	.....	.....
			Robinson-1.....	889	10	380	1,120	.....	.....	.....	.....
			Robinson-2.....	911	21	402	1,098	917	.....	.....	.....
			Robinson-3.....	917	.....	.....	.....	.....	.....	.....	No record.
			Robinson-4.....	917	27	412	1,088	977	.....	.....	.....
			Robinson-5.....	.....	.....	.....	.....	.....	.....	.....	No record.
			Robinson-6.....	.....	.....	.....	.....	.....	.....	.....	do.
			Robinson-7.....	.....	.....	.....	.....	.....	.....	.....	do.
			Robinson-8.....	865	7	371	1,129	.....	.....	.....	.....
			Robinson-9.....	885	10	391	1,109	.....	.....	.....	.....
			Robinson-10.....	909	30	415	1,085	.....	.....	.....	.....

33— N. E...

N. W... 34—

N. E...

## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
2—S. E...	12	P. Ewing	Randolph, No. 1	453	Robinson-1	853	20	400	1,100				No record
	13	P. Ewing	Randolph, No. 4	451	Robinson-1								do
	14	P. Ewing	Randolph, No. 6	452	Robinson-1	885	15	401	1,099				
	1	Pure	S. Shipman, No. 3	484	Robinson-3	915	17	431	1,069			10	
3—N. E...	2	Pure	S. Shipman, No. 7	485	do	932	18	447	1,053		950		
	3	Pure	S. Shipman, No. 6	487	Robinson-2	926	12	439	1,061	926			
					Robinson-3	943	29	456	1,044	943			
	4	Pure	S. Shipman, No. 4	490	Robinson-2	920	23	430	1,070				
					Robinson-3	1,006	11	516	984			15	Slate, 943 to 1,006 feet
	5	Pure	S. Shipman, No. 5	481	Robinson-1	880	25	399	1,101				
	6	Pure	S. Shipman, No. 1	476	Robinson-3	935	18	454	1,046		960	30	Slate, 905 to 935 feet
	7	Pure	S. Shipman, No. 2	480	Robinson-1	890	22	414	1,086		919	75	
	8	Ohio	Lamb, No. 6	477	Robinson-2	911	12	431	1,069		928	30	
	9	Ohio	Lamb, No. 7	478	do	905	21	428	1,072				
	10	Ohio	Lamb, No. 1	473	Robinson-3	930	10	452	1,048				
N. W. 11—N. E...	11	Samuels & McArthur	Lamb, No. 4	471	do	936	12	463	1,037		952		No record
	1	Ohio	S. Shipman, No. 1	490		1,070		580	920				Salt water
N. E...	1	Ohio	D. Shipman, No. 1	436	Robinson-1	856	22	420	1,080		828		
	2	Ohio	D. Shipman, No. 3	436	Robinson-3	932		496	1,004	934		10	Gas, 932 feet. Salt water 950 feet
N. W. 12—N. W...	3	Ohio	D. Shipman, No. 2	435	do	890	12	455	1,045	893			Gas, 892 feet
	4	Ohio	Conover, No. 2	435	Stray	996		561	939				Dry Salt water, 996 feet
	5	Ohio	Conover, No. 3	434	do	1,010	10	576	924				Dry Salt water, 1,010 feet
	6	Ohio	Conover, No. 1	439		1,026		587	913				Dry
	1	Hubbard	Baker, No. 1	448									No record
	1	Ohio	Jones, No. 1	451	Robinson-2	879		428	1,072				Well abandoned
N. W...	2	Ohio	Jones, No. 3	430	do	855		425	1,075	858		35	Gas, 855 feet

29 North Fork	Newlin, No. 4	494	273	44	394	1,116	903	937		
30 North Fork	Newlin, No. 2	495	865	13	370	1,130	887			
31 North Fork	Newlin, No. 9	496	987	25	404	1,094				
32 North Fork	Newlin, No. 7	493	927	25	434	1,066	887			
33 North Fork	Newlin, No. 3	491	917	40	424	1,076		941		
34 North Fork	Newlin, No. 6	490	890	35	389	1,111				
35 Kelly	Town Lot, No. 1	491	924	25	433	1,087	865			
36 Kelly	Town Lot, No. 2	490	914	30	424	1,076	921			No record.
37 Homestead	Martin, No. 1	492								do
38 Homestead	Martin, No. 4	492	853	11	386	1,134				Quit in sand
39 Homestead	Martin, No. 3	495	852	15	360	1,140		911		Quit in sand
40 Homestead	Martin, No. 2	493	874	39	392	1,118		913		Quit in sand
1 Work	J Dennis, No. 12	485	859	8	344	1,136				
2 Work	J Dennis, No. 15	480	870	14	394	1,116				
3 Work	J Dennis, No. 7	479	890	11	404	1,094		913		
4 Work	J Dennis, No. 11	485	892	12	390	1,131				
5 Work	J Dennis, No. 13	486	894	17	391	1,101				
6 Work	J Dennis, No. 10	488	909	20	416	1,094		931		
7 Work	J Dennis, No. 5	490	825	119	340	1,160			3,000	
8 Work	J Dennis, No. 6	486	830	117	350	1,150		947	260	Quit in sand
9 Work	J Dennis, No. 8	482	835	15	336	1,144			600	
10 Ohio	J Dennis, No. 9	482	876	38	397	1,163				
11 Ohio	J Dennis, No. 10	485	846	24	381	1,130				
12 Ohio	J Dennis, No. 7	480	898	49	411	1,090		945	500	Quit in sand
13 Ohio	J Dennis, No. 16	478	844	100	359	1,145		260		
14 Ohio	J Dennis, No. 6	480	843	14	334	1,146				
15 Ohio	J Dennis, No. 8	484	893	40	404	1,096		933	500	Quit in sand
16 Ohio	J Dennis, No. 12	486	853	10	393	1,133				
17 Ohio	J Dennis, No. 15	488	858	17	393	1,103		260		
18 Ohio	J Dennis, No. 11	487	822	16	412	1,098				
19 Pure	Price, No. 8	496	857	5	371	1,123		500		
20 Pure	Price, No. 7	495	894	57	398	1,102				
21 Pure	Price, No. 6	493	857	15	375	1,135				
			916	23	334	1,090	925			
			922	440	1,080		925			Gas, 925 feet.
			904	28	419	1,081	910			Gas, 905 feet.
			903	423	1,077		903			Gas, 903 feet.
										No record.
			920		440	1,080	925			Gas, 925 feet.
			915	434	1,086		920			Gas, 915 feet.
			904	22	417	1,083	906			Gas, 918 feet.
			910	424	1,076		906			Gas, 905 feet.
			938	19	451	1,049	960			Gas, 940 feet.
			876	5	300	1,110				
			890	36	404	1,094		926		
			880	40	405	1,096		945		
			887	18	408	1,086				
			913	40	439	1,084		260		

## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
21— S. E.	26	Ohio.....	McColpin, No. 1.....	450	Robinson-1.....	854.....	.....	404.....	1,096.....	856.....	.....	800	Gas, 854 feet. Salt water, 861 feet.....
	27	Ohio.....	McColpin, No. 2.....	450	..do.....	845.....	.....	395.....	1,105.....	870.....	.....	150	Gas, 850 feet, Salt water, 870 feet.....
	28	Ohio.....	McColpin, No. 3.....	451	..do.....	843.....	.....	392.....	1,108.....	850.....	.....	1,000	Gas, 845 feet.....
	29	Ohio.....	McColpin, No. 6.....	458	..do.....	855.....	.....	397.....	1,103.....	865.....	.....	800	Gas, 860 feet. Salt water, 875 feet.....
	30	Featzer, Copeland et, al.....	McColpin, No. 5.....	457	..do.....	850.....	.....	393.....	1,107.....	855.....	.....	200	Gas, 850 feet.....
	31	Featzer, Copeland et, al.....	McColpin, No. 4.....	451	Robinson-2.....	863.....	.....	412.....	1,088.....	865.....	.....	1,100	Gas, 865 feet. Salt water, 870 feet.....
22— N. E.	32	Brown-Hogue.....	Wasson, No. 2.....	452	Robinson-1.....	842.....	20.....	390.....	1,110.....	862.....	904.....	.....	.....
	33	Brown-Hogue.....	Wasson, No. 3.....	458	..do.....	860.....	50.....	402.....	1,098.....	.....	915.....	.....	.....
	34	Brown-Hogue.....	Wasson, No. 4.....	469	Robinson-2.....	892.....	31.....	423.....	1,077.....	.....	.....	.....	.....
	35	Brown-Hogue.....	Wasson, No. 6.....	472	..do.....	912.....	28.....	440.....	1,060.....	.....	.....	.....	.....
	36	Brown-Hogue.....	Wasson, No. 5.....	465	..do.....	865.....	41.....	420.....	1,080.....	.....	.....	.....	.....
	1	Red Bank.....	C. Martin, No. 10.....	484	Robinson-1.....	858.....	.....	374.....	1,126.....	.....	.....	Gas	Gas, 858 feet. 1,500,000 cu. ft. gas from this well
	2	Red Bank.....	C. Martin, No. 7.....	484	Robinson-2.....	900.....	68.....	416.....	1,084.....	.....	.....	.....	Gas, 900 feet.....
					Robinson-1.....	855.....	.....	371.....	1,129.....	.....	.....	.....	.....
					Robinson-2.....	875.....	.....	391.....	1,109.....	.....	.....	.....	.....
					Robinson-3.....	943.....	.....	459.....	1,041.....	943.....	.....	.....	.....
	3	Red Bank.....	C. Martin, No. 6.....	480	Robinson-1.....	840.....	.....	360.....	1,140.....	.....	.....	.....	.....
					Robinson-2.....	875.....	20.....	395.....	1,105.....	890.....	.....	.....	.....
					Robinson-3.....	925.....	10.....	445.....	1,055.....	925.....	.....	35	.....
	4	Red Bank.....	C. Martin, No. 3.....	470	Robinson-1.....	843.....	25.....	373.....	1,127.....	.....	.....	.....	.....
5	Red Bank.....	C. Martin, No. 5.....	475	Robinson-2.....	873.....	27.....	403.....	1,097.....	873.....	.....	50	.....	
6	Red Bank.....	C. Martin, No. 1.....	486	Robinson-1.....	859.....	.....	384.....	1,116.....	882.....	.....	.....	.....	
				Casey.....	400.....	.....	+86.....	1,586.....	.....	.....	.....	.....	
				Robinson-1.....	860.....	24.....	374.....	1,126.....	.....	.....	.....	.....	
				Robinson-2.....	890.....	.....	404.....	1,096.....	{ 902 } { 920 }	.....	.....	.....	



## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Name.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
						Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
21— S. E.	26	Ohio.....	McColpin, No. 1.....	450	Robinson-1.....	854	.....	404	1,096	856	.....	800	Gas, 854 feet. Salt water, 861 feet.....
	27	Ohlo.....	McColpin, No. 2.....	450	..do.....	845	.....	395	1,105	870	.....	150	Gas, 850 feet, Salt water, 870 feet.....
	28	Ohio.....	McColpin, No. 3.....	451	..do.....	843	.....	392	1,108	850	.....	1,000	Gas, 845 feet.....
	29	Ohio.....	McColpin, No. 6.....	458	..do.....	855	.....	397	1,103	865	.....	800	Gas, 860 feet. Salt water, 875 feet.....
	30	Featzer, Copeland et, al..	McColpin, No. 5.....	457	..do.....	850	.....	393	1,107	855	.....	200	Gas, 850 feet.....
	31	Featzer, Copeland et, al..	McColpin, No. 4.....	451	Robinson-2.....	863	.....	412	1,088	865	.....	1,100	Gas, 865 feet. Salt water, 870 feet.....
	32	Brown-Hogue.....	Wasson, No. 2.....	452	Robinson-1.....	842	20	390	1,110	862	904	.....	.....
	33	Brown-Hogue.....	Wasson, No. 3.....	458	..do.....	860	50	402	1,098	.....	915	.....	.....
	34	Brown-Hogue.....	Wasson, No. 4.....	469	Robinson-2.....	892	31	423	1,077	.....	.....	.....	.....
	35	Brown-Hogue.....	Wasson, No. 6.....	472	..do.....	912	28	440	1,060	.....	.....	.....	.....
	36	Brown-Hogue.....	Wasson, No. 5.....	465	..do.....	885	41	420	1,080	.....	.....	.....	.....
22— N. E.	1	Red Bank.....	C. Martin, No. 10.....	484	Robinson-1.....	858	.....	374	1,126	.....	.....	Gas	Gas, 858 feet. 1,500,000 cu. ft. gas from this well
	2	Red Bank.....	C. Martin, No. 7.....	484	Robinson-2.....	900	68	416	1,084	.....	.....	.....	Gas, 900 feet.....
	3	Red Bank.....	C. Martin, No. 6.....	480	Robinson-1.....	875	.....	371	1,129	.....	.....	.....	.....
	4	Red Bank.....	C. Martin, No. 3.....	470	Robinson-2.....	855	.....	391	1,109	.....	.....	.....	.....
	5	Red Bank.....	C. Martin, No. 5.....	475	Robinson-3.....	943	.....	459	1,041	943	.....	.....	.....
	6	Red Bank.....	C. Martin, No. 1.....	486	Robinson-1.....	840	.....	360	1,140	.....	.....	.....	.....
					Robinson-2.....	875	20	395	1,105	890	.....	35	.....
					Robinson-3.....	925	10	445	1,055	925	.....	.....	.....
					Robinson-1.....	843	25	373	1,127	.....	.....	.....	.....
					Robinson-2.....	873	27	403	1,097	873	.....	50	.....
					Robinson-1.....	859	.....	384	1,116	882	.....	.....	.....
					Casey.....	400	.....	+86	1,586	.....	.....	.....	.....
					Robinson-1.....	860	24	374	1,126	.....	.....	.....	.....
					Robinson-2.....	890	.....	404	1,096	902	920	.....	.....

7	Crescent	Wakefield Hrs., No. 1.	486	Robinson-1	873	10	387	1,113	.....	937	.....	.....
8	Crescent	H. Martin, No. 1.	485	Robinson-2	893	37	407	1,093	.....	872	.....	.....
9	Crescent	H. Martin, No. 8.	483	Robinson-1	872	17	387	1,113	.....	.....	.....	.....
10	Crescent	H. Martin, No. 7.	486	Robinson-2	892	42	407	1,093	.....	.....	.....	.....
11	Crescent	H. Martin, No. 6.	484	Robinson-1	878	12	395	1,105	.....	.....	.....	.....
12	Crescent	H. Martin, No. 9.	477	Robinson-2	892	46	409	1,091	.....	892	.....	.....
13	Crescent	H. Martin, No. 2.	482	Robinson-1	866	13	380	1,120	.....	.....	.....	.....
14	Crescent	H. Martin, No. 3.	477	Robinson-2	900	28	414	1,086	.....	920	.....	.....
15	Crescent	H. Martin, No. 4.	482	Robinson-1	870	5	386	1,114	.....	.....	.....	.....
16	Crescent	H. Martin, No. 5.	482	Robinson-2	895	53	411	1,089	.....	907	.....	.....
17	Red Bank	A. Smith, No. 3.	468	do	891	50	414	1,086	.....	.....	.....	.....
18	Red Bank	A. Smith, No. 1.	482	Robinson-1	876	4	394	1,106	.....	.....	.....	.....
19	Red Bank	A. Smith, No. 2.	470	Robinson-2	896	24	414	1,086	.....	.....	.....	.....
20	Red Bank	A. Smith, No. 4.	475	Robinson-1	867	8	390	1,110	.....	867	.....	Gas, 860 feet
21	Morrison	do	479	Robinson-2	880	31	403	1,097	.....	.....	.....	.....
22	Morrison	A. Smith, No. 5.	465	Robinson-1	868	15	386	1,114	.....	870	.....	.....
23	Morrison	A. Smith, No. 3.	460	Robinson-2	895	27	413	1,087	.....	.....	.....	.....
24	Morrison	A. Smith, No. 2.	464	Robinson-1	861	69	379	1,121	.....	.....	.....	Gas, 861 feet
25	Morrison	Dennis, No. 1.	474	Robinson-2	887	17	419	1,081	.....	.....	50	.....
26	Wark	Dennis, No. 1.	469	Robinson-1	855	18	373	1,127	.....	.....	.....	Gas sand
27	Wark	Dennis, No. 2.	477	Robinson-2	891	29	409	1,091	.....	.....	100	.....
28	Wark	Dennis, No. 3.	483	Robinson-1	852	51	382	1,118	.....	892	.....	25
29	W. W. Splane	Prior, No. 4.	475	Robinson-2	855	36	380	1,120	.....	.....	.....	.....
30	W. W. Splane	Prior, No. 8.	469	Robinson-1	847	.....	388	1,132	.....	.....	.....	Gas
31	W. W. Splane	Prior, No. 6.	481	Robinson-2	882	23	403	1,097	.....	.....	.....	125
				Robinson-3	838	12	373	1,127	.....	.....	.....	.....
				Robinson-1	884	28	419	1,081	.....	.....	.....	125
				Robinson-2	864	27	404	1,096	.....	.....	.....	125
				Robinson-1	836	29	372	1,128	.....	.....	.....	.....
				Robinson-2	874	21	410	1,090	.....	.....	.....	.....
				Robinson-3	945	10	481	1,019	.....	.....	125	.....
				Robinson-2	883	34	409	1,091	.....	.....	125	.....
				Robinson-1	836	63	367	1,133	.....	.....	300	.....
				do	850	35	373	1,127	.....	.....	.....	.....
				Robinson-2	910	8	433	1,067	.....	.....	.....	.....
				Robinson-3	926	12	449	1,051	.....	.....	.....	.....
				Robinson-4	965	13	488	1,012	.....	.....	40	.....
				Robinson-1	856	15	373	1,127	.....	.....	.....	.....
				Robinson-2	901	39	418	1,082	.....	.....	.....	.....
				Robinson-4	970	5	487	1,013	.....	1,025	10	.....
				Robinson-1	847	5	372	1,128	.....	.....	Show	.....



## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
36— N. E.	20	Ohio.....	Adams, No. 6.....	452	Robinson-1.....	803	27	351	1,149	805	15	Gas, 805 feet.....
	21	Ohio.....	Adams, No. 8.....	453	do.....	802	26	349	1,151	805	45	Gas, 803 feet.....
	22	Ohio.....	Adams, No. 2.....	467	do.....	808	37	341	1,159	815	200	Gas, 815 feet.....
	23	Ohio.....	Adams, No. 7.....	462	do.....	790	32	328	1,172	808	40	Gas, 796 feet.....
N. W.	1	American Oil & Development Co.....	Richart, No. 5.....	464	do.....	814	31	350	1,150	833		
	2	American Oil & Development Co.....	Richart, No. 4.....	475	do.....	824	41	349	1,151		100	
	3	American Oil & Development Co.....	Richart, No. 3.....	467	Robinson-2.....	863	32	396	1,104			
	4	American Oil & Development Co.....	Richart, No. 6.....	461	Robinson-3.....	925	17	458	1,042	926	50	
	5	American Oil & Development Co.....	Richart, No. 8.....	464	Shallow.....	640	14	179	1,321			
	6	American Oil & Development Co.....	Richart, No. 26.....	455	Robinson-1.....	792	24	331	1,169	811		
	7	American Oil & Development Co.....	Richart, No. 15.....	468	Robinson-2.....	850	30	389	1,111	876		
	8	Red Bank.....	Mitchell, No. 1.....	468	Stray.....	767	56	303	1,197		100	
	9	Red Bank.....	Mitchell, No. 2.....	465	Robinson-1.....	787	32	332	1,168	792		
	10	Ohio.....	Mitchell, No. 3.....	480	Robinson-2.....	829	5	374	1,126			
	11	Ohio.....	Mitchell, No. 1.....	456	Robinson-3.....	850	42	395	1,105	897		
	12	Ohio.....	Mitchell, No. 5.....	475	Robinson-1.....	807	26	339	1,161		100	
	13	Ohio.....	Adams, No. 1.....	475	do.....	804	24	338	1,164	820	100	
	14	Ohio.....	Adams, No. 1.....	454	do.....	790	27	325	1,175		20	No record.....
	15	Wabash.....	Doucummen, No. 1.....	456	do.....	791	19	335	1,165		25	
	16	Ohio.....	Doucummen, No. 6.....	464	Robinson-1.....	806	19	331	1,169	818		
					Robinson-3.....	826	10	350	1,150	975		
					Robinson-2.....	804	10	350	1,150	830		Gas, 827 feet.....
					Robinson-3.....	775	16	319	1,181	791		Gas, 806 feet.....
					Robinson-2.....	912	32	456	1,044			
					Robinson-3.....	854	12	390	1,110			Gas, 800 feet.....
					Robinson-3.....	906	19	442	1,058	910	5	

Docummen, No. 5.....	439	886	424	1,066	823	40	.....
Docummen, No. 3.....	479	809	330	1,170	.....	.....	.....
Docummen, No. 7.....	468	791	323	1,177	.....	30	.....
Docummen, No. 2.....	462	788	341	1,160	.....	100	Gas, 847 feet.
Sparks, No. 1.....	466	868	34	1,174	.....	22	Balt water, 927 feet.
Maxwell, No. 3.....	451	867	12	1,094	.....	Gas	.....
Maxwell, No. 6.....	447	903	401	1,080	905	42	.....
Maxwell, No. 7.....	448	830	437	1,063	.....	.....	.....
Pope, No. 3.....	442	912	379	1,121	.....	.....	.....
Pope, No. 16.....	446	773	15	1,039	.....	.....	.....
Pope, No. 2.....	444	772	20	1,174	772	.....	.....
Pope, No. 18.....	441	891	3	1,176	.....	.....	.....
Pope, No. 1.....	441	891	11	1,067	.....	.....	.....
Pope, No. 6.....	443	776	8	1,167	.....	.....	.....
Sparks, No. 4.....	460	888	12	1,054	.....	.....	.....
Sparks, No. 1.....	454	770	32	1,176	906	.....	.....
Sparks, No. 13.....	459	773	27	1,171	.....	.....	.....
Sparks, No. 17.....	467	850	27	1,094	887	.....	.....
Sparks, No. 15.....	467	835	33	1,056	.....	8	.....
Sparks, No. 14.....	465	767	23	1,174	.....	.....	.....
Sparks, No. 12.....	466	782	38	1,160	.....	.....	.....
Sparks, No. 16.....	465	857	13	1,094	872	.....	.....
Sparks, No. 9.....	463	775	28	1,168	.....	.....	.....
Sparks, No. 10.....	461	946	16	1,097	892	.....	.....
Sparks, No. 18.....	470	782	38	1,168	877	.....	.....
Sparks, No. 8.....	453	800	45	1,064	468	.....	.....
Sparks, No. 6.....	450	799	33	1,150	909	.....	.....
Sparks, No. 5.....	448	815	23	1,152	899	.....	.....
Sparks, No. 4.....	448	810	20	1,157	.....	.....	.....
Sparks, No. 3.....	448	851	3	1,116	870	.....	.....
Sparks, No. 2.....	448	808	22	1,157	852	.....	.....
Sparks, No. 1.....	448	824	26	1,142	910	.....	.....
Sparks, No. 16.....	465	823	15	1,142	.....	.....	.....
Sparks, No. 9.....	463	851	14	1,114	902	.....	.....
Sparks, No. 10.....	461	836	20	1,127	.....	.....	.....
Sparks, No. 18.....	470	804	32	1,157	861	.....	.....
Sparks, No. 8.....	453	817	22	1,153	875	.....	.....
Sparks, No. 6.....	450	769	23	1,164	903	.....	.....
Sparks, No. 5.....	448	772	22	1,176	820	.....	.....
Sparks, No. 4.....	448	905	20	1,157	872	.....	.....
Sparks, No. 3.....	448	772	27	1,173	.....	25	.....
Maxwell, No. 5.....	445	790	6	1,162	.....	.....	.....
Maxwell, No. 1.....	452	860	25	1,062	.....	.....	.....
Richart, No. 27.....	452	788	30	1,164	861	.....	.....
Richart, No. 14.....	453	787	34	1,166	821	.....	.....
Richart, No. 16.....	450	786	20	1,155	.....	.....	.....
Richart, No. 16.....	450	817	20	1,033	.....	26	.....
Richart, No. 16.....	450	817	20	1,033	.....	.....	.....

S W...

S E...

## Crawford County—Martin Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
36— S. E...	21	American Oil & Development Co.	Richart, No. 17.	445	Robinson-1.....	808	8	363	1,137	808	35	.....
	21				Robinson-2.....	818	11	373	1,127	.....	.....	.....
	22	Riddle.....	Mann, No. 5.	450	Robinson-3.....	931	.....	486	1,014	.....	.....	Salt water, 931 feet.
	23	Riddle.....	Mann, No. 6.	455	Robinson-1.....	803	18	353	1,147	807	50	.....
	24	Riddle.....	Mann, No. 7.	455	Robinson-3.....	923	12	473	1,027	.....	.....	Salt water, 930 feet.
	25	Riddle.....	Mann, No. 8.	450	Robinson-1.....	800	32	345	1,155	.....	40	.....
	26	Riddle.....	Mann, No. 4.	445	do.....	819	14	364	1,136	.....	.....	.....
	27	Riddle.....	Mann, No. 3.	450	Robinson-3.....	911	26	456	1,044	.....	.....	.....
	28	Riddle.....	Mann, No. 2.	450	Robinson-1.....	815	15	365	1,135	.....	.....	.....
	29	Riddle.....	Mann, No. 1.	451	Robinson-3.....	919	.....	469	1,031	938	.....	.....
					Robinson-1.....	802	19	357	1,143	816	.....	.....
					Robinson-3.....	912	26	467	1,033	915	40	Gas, 915 feet.
					Robinson-1.....	795	35	345	1,155	801	Show	.....
					Robinson-3.....	893	41	443	1,057	.....	40	.....
					Robinson-1.....	815	5	365	1,135	.....	.....	.....
					Robinson-3.....	901	32	451	1,049	.....	80	.....
					Robinson-3.....	908	47	457	1,043	.....	40	.....



Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
23—S. E.	7	Crescent	Hooker, No. 5	512	Robinson-1	855		343	1,157				No record
	8	Ohio	Hooker, No. 2	512	Robinson-3	950	10	438	1,062		966	25	
	9	Ohio	Hooker, No. 3	524	Robinson-1	916	6	392	1,108		980		
	10	Ohio	Hooker, No. 4	524	do	918	6	394	1,106		981	Light	
	11	Ohio	Hooker, No. 1	524	do	919	30	395	1,105				
24—N. E.					Robinson-3	966	17	442	1,058		983		
	1	Ohio	O. Mann, No. 1	529	Robinson-1	918	30	389	1,111				
					Robinson-3	980		451	1,049			Dry	Salt water, 990 feet
	1	Ohio	Morrison, No. 1	522	Robinson-1	935	15	413	1,087				
	2	Ohio	Morrison, No. 2	525	Robinson-2	953	10	431	1,069			25	Slate, 950 to 953 feet
S. W.	3	Morrison	Weirich, No. 1	517	do	958	5	433	1,067				
	4	Morrison	Weirich, No. 4	527	Robinson-1	911		394	1,106			50	
	5	Morrison	Weirich, No. 3	523	do	921	33	404	1,096			50	Gas, 920 feet
	6	Morrison	Weirich, No. 2	522	Robinson-1	920	49	393	1,107	932			Gas, 922 feet
	1	Morrison	Butler, No. 2	523	Robinson-2	922	21	399	1,101			50	
S. W.	2	Morrison	Weirich, No. 2	522	Robinson-1	950	14	427	1,073				
	3	Morrison	Butler, No. 1	523	Robinson-2	912		390	1,110				
	4	Morrison	Butler, No. 3	508	Robinson-3	936		414	1,086			50	
	5	Red Bank	Butler, No. 4	518	Robinson-1	970		448	1,052				
	6	Red Bank	Dyar, No. 1	514	Robinson-2	925		402	1,098			3	
S. W.					Robinson-3	962	8	459	1,041	962			
	1	Morrison	Butler, No. 1	523	Robinson-1	921		398	1,102				
	2	Morrison	Butler, No. 2	523	Robinson-2	940	29	417	1,083	940		200	
	3	Morrison	Butler, No. 3	508	do	922		414	1,086	930		Show	Gas, 922 feet
	4	Morrison	Butler, No. 4	518	Robinson-3	963	15	455	1,045	963			
S. W.	5	Red Bank	Dyar, No. 1	514	Robinson-1	907		389	1,111			14	
	6	Red Bank	Dyar, No. 2	506	Robinson-3	979	6	461	1,039			25	
					Robinson-1	903		389	1,111	926			
					Robinson-2	964	18	450	1,050				
					Robinson-3	923	45	417	1,083	928		300	

S. E...	7 Red Bank	Dyar, No. 4.	511	Robinson-1	885	18	374	1,126	.....	.....	.....	.....
	8 Red Bank	Dyar, No. 3.	502	Robinson-3	948	.....	427	1,063	.....	.....	.....	40
	9 Ohio	Smith, No. 4.	500	Robinson-1	872	30	370	1,130	897	.....	.....	25
	10 Ohio	Smith, No. 2.	518	Robinson-3	960	65	458	1,042	960	.....	.....	5
	11 Ohio	Smith, No. 3.	520	Robinson-1	905	11	405	1,095	980	.....	.....	10
	12 Ohio	Smith, No. 1.	520	Robinson-3	969	10	451	1,049	.....	.....	.....	.....
	1 Red Bank	Johnson, No. 3.	518	do	965	27	445	1,055	.....	.....	.....	.....
	2 Red Bank	Johnson, No. 2.	498	Robinson-1	923	19	403	1,097	.....	.....	.....	100
	3 Red Bank	Johnson, No. 1.	488	Robinson-2	952	10	432	1,068	.....	.....	.....	Light
	1 Crescent	Johnson, No. 1.	497	Stray	861	11	363	1,137	.....	.....	.....	Show
	2 Crescent	Johnson, No. 2.	498	Robinson-3	981	32	463	1,037	.....	.....	.....	Salt water, 986 feet. Well
	3 Haywood	Richard, No. 1.	495	Robinson-2	977	12	425	1,075	.....	.....	.....	abandoned.
N. F...	1 Crescent	Johnson, No. 1.	497	Robinson-3	939	.....	479	1,021	.....	.....	.....	Gas, 923 feet
	2 Crescent	Johnson, No. 2.	498	Robinson-2	980	35	451	1,049	950	.....	.....	Dry
	3 Haywood	Richard, No. 1.	495	Robinson-1	890	10	303	1,107	.....	.....	.....	Salt water, 955 feet
	4 Splane	Coulter, No. 1.	492	Robinson-2	942	5	445	1,055	.....	.....	.....	.....
	1 Mahutska	Weirich, Heirs, No. 4.	491	Robinson-3	960	25	463	1,037	965	.....	.....	Quit in sand
	2 Mahutska	Weirich, Heirs, No. 2.	496	Robinson-1	885	12	387	1,113	.....	.....	.....	.....
	3 Mahutska	Weirich, Heirs, No. 3.	497	Robinson-2	935	18	437	1,063	.....	.....	.....	Salt water, 976 feet
	4 Mahutska	Weirich, Heirs, No. 1.	488	Robinson-3	958	20	460	1,040	.....	.....	.....	Coal, 725 feet
	5 Mahutska	H. Weirich, No. 2.	493	Robinson-1	890	16	395	1,105	.....	.....	.....	Salt water, 978 feet. Well
	6 Mahutska	H. Weirich, No. 8.	497	Robinson-3	964	19	469	1,031	.....	.....	.....	abandoned.
	7 Mahutska	H. Weirich, No. 5.	504	Robinson-2	867	24	375	1,125	.....	.....	.....	.....
	8 Mahutska	H. Weirich, No. 6.	496	Robinson-3	937	7	445	1,055	943	.....	.....	Salt water, 970 feet. Well
N. W..	1 Mahutska	Weirich, Heirs, No. 3.	497	do	959	62	468	1,032	.....	.....	.....	abandoned.
	2 Mahutska	Weirich, Heirs, No. 2.	496	Robinson-1	875	13	379	1,121	.....	.....	.....	Salt water, 978 feet
	3 Mahutska	Weirich, Heirs, No. 1.	488	Robinson-3	962	31	466	1,034	978	.....	.....	Dry
	4 Mahutska	Weirich, Heirs, No. 1.	488	Robinson-1	849	14	352	1,148	.....	.....	.....	.....
	5 Mahutska	H. Weirich, No. 2.	493	Stray	886	22	389	1,111	.....	.....	.....	Salt water, 922 feet. Well
	6 Mahutska	H. Weirich, No. 8.	497	Robinson-2	914	44	417	1,083	.....	.....	.....	abandoned.
	7 Mahutska	H. Weirich, No. 5.	504	Robinson-1	835	8	347	1,153	.....	.....	.....	.....
	8 Mahutska	H. Weirich, No. 6.	496	Robinson-2	905	11	417	1,083	.....	.....	.....	.....
	9 Mahutska	H. Weirich, No. 3.	508	Stray	922	20	434	1,066	.....	.....	.....	.....
	10 Mahutska	H. Weirich, No. 2.	493	Robinson-3	950	28	462	1,038	.....	.....	.....	Dry
	11 Mahutska	H. Weirich, No. 8.	497	Robinson-1	838	9	345	1,155	.....	.....	.....	Show
	12 Mahutska	H. Weirich, No. 5.	504	Robinson-2	909	17	416	1,084	935	.....	.....	150

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
25— N W.	10	Mahutska.	H. Weirich, No. 4.	508	Robinson-1.	866	15	358	1,142	.....	.....	.....
	11	Mahutska.	H. Weirich, No. 10.	503	Robinson-2.	923	46	415	1,085	.....	150	.....
	12	Mahutska.	H. Weirich, No. 9.	484	Robinson-1.	835	25	332	1,168	.....	.....	.....
	13	Mahutska.	H. Weirich, No. 1.	498	Robinson-2.	920	28	417	1,083	.....	.....	.....
	14	Mahutska.	H. Weirich, No. 7.	479	Robinson-1.	820	27	336	1,164	832	.....	.....
	1	Red Bank.	Smith, No. 3.	493	Robinson-2.	903	35	419	1,081	.....	.....	.....
	2	Red Bank.	Smith, No. 2 "B".	473	Robinson-1.	842	13	344	1,156	.....	.....	.....
	3	Red Bank.	Smith, No. 1 "B".	473	Robinson-2.	914	32	416	1,084	.....	150	.....
	4	Red Bank.	Maxwell, No. 3.	486	Robinson-1.	824	14	345	1,155	.....	.....	.....
	5	Red Bank.	Maxwell, No. 1.	490	Robinson-2.	838	60	409	1,091	.....	150	.....
	6	Bed Bank.	Maxwell, No. 2.	490	.....	.....	.....	.....	.....	.....	No record.	.....
	7	Red Bank.	Maxwell, No. 4.	488	Robinson-1.	815	11	342	1,158	.....	.....	.....
	8	Ohio.	Smith, No. 1.	469	Robinson-2.	902	25	429	1,071	.....	50	.....
	9	Ohio.	Smith, No. 2.	480	Stray.	795	22	322	1,178	.....	.....	.....
S W.	10	Ohio.	Maxwell, No. 1.	483	Robinson-1.	842	32	369	1,131	.....	.....	.....
	11	Ohio.	Maxwell, No. 2.	484	Robinson-2.	830	10	344	1,156	.....	.....	.....
	12	Ohio.	Maxwell, No. 3.	483	Robinson-1.	912	15	426	1,074	912	10	.....
					Stray.	785	24	295	1,205	.....	.....	.....
					Robinson-1.	852	12	362	1,138	.....	25	.....
					Stray.	815	15	325	1,175	820	25	.....
					Robinson-2.	906	10	416	1,084	.....	.....	.....
					Robinson-1.	830	8	342	1,158	.....	.....	.....
					Robinson-3.	918	18	430	1,070	.....	50	.....
					Robinson-1.	808	30	339	1,161	.....	.....	.....
					Robinson-2.	885	22	416	1,084	.....	.....	.....
					Robinson-3.	902	23	422	1,078	.....	100	.....
					do.	906	7	423	1,077	.....	.....	.....
					Robinson-1.	820	26	336	1,164	832	.....	.....
					Robinson-2.	895	9	411	1,089	.....	.....	.....
					Robinson-1.	859	4	378	1,124	.....	.....	.....
					Robinson-2.	910	18	427	1,073	.....	.....	.....

Edwards	W. Buck, No. 17	483	800	38	217	1,153	819	Show
Edwards	W. Buck, No. 9	483	846	4	411	1,138		Dry
Edwards	W. Buck, No. 12	481	874	19	411	1,089		
Edwards	W. Buck, No. 1	483	832	34	349	1,151	869	914
Edwards	W. Buck, No. 1	483	870	10	389	1,111		
Edwards	W. Buck, No. 1	483	868	8	404	1,090		908
Edwards	W. Buck, No. 1	483	848	50	415	1,080		
Edwards	W. Buck, No. 1	483	808	38	383	1,137	858	
Edwards	W. Buck, No. 1	483	848	41	384	1,128		
Edwards	W. Buck, No. 1	483	800	19	419	1,081	910	919
Edwards	W. Buck, No. 1	483	838	10	371	1,129		
Edwards	W. Buck, No. 1	483	808	24	408	1,088		
Edwards	W. Buck, No. 1	483	800	25	378	1,134	834	
Edwards	W. Buck, No. 1	483	806	17	378	1,128		
Edwards	W. Buck, No. 1	483	830	16	381	1,149		
Edwards	W. Buck, No. 1	483	836	16	377	1,132	800	802
Edwards	W. Buck, No. 1	483	863	16	385	1,115		
Edwards	W. Buck, No. 1	483	863	25	382	1,118		
Edwards	W. Buck, No. 1	483	864	18	380	1,130		
Edwards	W. Buck, No. 1	483	861	18	383	1,117		
Edwards	W. Buck, No. 1	483	833	13	382	1,118		
Edwards	W. Buck, No. 1	483	809	16	388	1,102		
Edwards	W. Buck, No. 1	483	863	16	378	1,132		
Edwards	W. Buck, No. 1	483	845	15	385	1,115		
Edwards	W. Buck, No. 1	483	898	8	408	1,092		
Edwards	W. Buck, No. 1	483	856	21	379	1,131		
Edwards	W. Buck, No. 1	483	859	11	412	1,188	900	
Edwards	W. Buck, No. 1	483	864	16	384	1,106		
Edwards	W. Buck, No. 1	483	858	19	392	1,108		
Edwards	W. Buck, No. 1	483	878	16	398	1,102	884	15
Edwards	W. Buck, No. 1	483	854	23	398	1,114	890	8
Edwards	W. Buck, No. 1	483	845	20	385	1,115	849	25
Edwards	W. Buck, No. 1	483	882	22	392	1,108		Gas, 855 feet.
Edwards	W. Buck, No. 1	483	835	12	376	1,124		Gas, 845 feet.
Edwards	W. Buck, No. 1	483	835	12	376	1,124		Salt water, 859 feet.
Edwards	W. Buck, No. 1	483	835	7	378	1,122		
Edwards	W. Buck, No. 1	483	832	17	378	1,122		
Edwards	W. Buck, No. 1	483	832	14	376	1,124		
Edwards	W. Buck, No. 1	483	839	13	382	1,118		
Edwards	W. Buck, No. 1	483	806	11	389	971	897	Salt water, 904 feet.
Edwards	W. Buck, No. 1	483	843	14	387	1,113		
Edwards	W. Buck, No. 1	483	843	13	385	1,115		
Edwards	W. Buck, No. 1	483	868	182	530	970		Salt water, 909 and 1,003 feet.
Edwards	W. Buck, No. 1	483	816	64	382	1,108	805	804
Edwards	W. Buck, No. 1	483	870	19	402	1,068		Dry Salt water.

**E-N-E...**



Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
26— N. E..	12	Red Bank.....	H mblin, No. 1 "R. B"....	508 {	Robinson-1.....	853	17	345	1,155	.....	.....	.....	.....
	13	Red Bank.....	Hamblin, No. 2 "R. B."...	506 {	Robinson-2.....	891	15	383	1,117	.....	.....	100	.....
	14	Red Bank.....	Hamblin, No. 1 "B".....	499 {	do.....	847	34	341	1,159	.....	.....	.....	.....
	15	Ohio.....	Cullison-Wagner, No. 3.....	504 {	Robinson-2.....	848	9	349	1,151	.....	.....	.....	.....
	16	Ohio.....	Cullison-Wagner, No. 1.....	499 {	Robinson-2.....	884	16	385	1,115	.....	.....	.....	No record
	17	Ohio.....	Cullison-Wagner, No. 2.....	494 {	Shallow.....	.....	24	398	1,102	902	.....	.....	Gas, 820 feet
	18	Red Bank.....	Weirich, No. 1.....	503 {	Robinson-2.....	480	25	+14	1,514	.....	.....	60	.....
	19	Red Bank.....	Weirich, No. 2.....	506 {	Robinson-2.....	892	34	398	1,102	895	.....	.....	.....
	20	Wabash.....	Weirich, No. 1.....	498 {	Robinson-1.....	845	11	342	1,158	.....	.....	.....	.....
	21	Ohio.....	Weirich, No. 5.....	498 {	Robinson-2.....	886	20	383	1,117	886	.....	.....	Gas 846 feet
	22	Ohio.....	Weirich, No. 1.....	497 {	Robinson-2.....	949	10	446	1,054	.....	.....	.....	.....
	23	Ohio.....	Weirich, No. 3.....	495 {	Robinson-1.....	846	9	340	1,160	.....	.....	100	.....
	24	Ohio.....	Weirich, No. 6.....	498 {	Robinson-2.....	890	19	384	1,116	.....	.....	.....	.....
	25	Ohio.....	Weirich, No. 2.....	509 {	Robinson-1.....	843	50	345	1,155	.....	.....	.....	Gas, 845 feet
	26	Ohio.....	Weirich, No. 4.....	498 {	Robinson-3.....	911	37	413	1,067	.....	.....	.....	.....
	1	Crawford & Milligan.....	J. Wright, No. 8.....	515 {	Robinson-1.....	845	.....	347	1,153	.....	.....	.....	No record
	2	Crawford & Milligan.....	J. Wright, No. 5.....	508 {	Robinson-2.....	879	4	381	1,119	926	.....	150	.....
	3	Crawford & Milligan.....	J. Wright, No. 13.....	510 {	Robinson-3.....	925	23	427	1,073	.....	.....	.....	.....
N. W..	1	Crawford & Milligan.....	J. Wright, No. 8.....	515 {	do.....	910	30	413	1,067	.....	.....	200	No record
	2	Crawford & Milligan.....	J. Wright, No. 5.....	508 {	Stray.....	905	35	410	1,090	.....	.....	300	Gas, 830 feet
	3	Crawford & Milligan.....	J. Wright, No. 13.....	510 {	Robinson-1.....	827	6	318	1,182	.....	.....	.....	.....
					Robinson-2.....	825	15	327	1,173	.....	.....	110	.....
					Robinson-1.....	892	14	394	1,106	898	.....	.....	.....
					Robinson-2.....	840	.....	325	1,175	.....	.....	.....	.....
					Robinson-3.....	882	2	367	1,133	.....	.....	.....	.....
					Robinson-1.....	907	12	392	1,108	908	.....	.....	No record
					Robinson 1.....	853	7	343	1,157	.....	.....	.....	.....
					Robinson-2.....	882	22	372	1,128	.....	.....	.....	.....

yards		381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	
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**E-N-E...**

Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
26— S. W..	7	Morrison	Hughes, No. 2.	499	Robinson-1	818	77	319	1,181	861		
	8	Morrison	Hughes, No. 1.	501	Robinson-2	901	21	402	1,098		800	
	9	Red Bank	Renchen, No. 2.	497	do	896	31	396	1,105		75	
	10	Red Bank	Renchen, No. 3.	504	Robinson-1	866	23	369	1,131	870	200	
	11	Red Bank	Renchen, No. 1.	500	Robinson-2	898	52	394	1,106	904	100	
	12	Ohio	Renchen, No. 3.	500	do	900	33	400	1,100			
	13	Ohio	Renchen, No. 2.	504	Robinson-1	845	49	345	1,155		29	
	14	Ohio	Rencher, No. 1.	498	Robinson-2	907	26	408	1,092			
	15	Red Bank	Wampler, No. 1.	498	Robinson-1	830	35	335	1,165			
	16	Red Bank	Wampler, No. 3.	500	Robinson-2	900	23	403	1,097			
	17	Red Bank	Wampler, No. 2.	500	Robinson-3	942	45	332	1,168		100	
	18	Ohio	Wampler, No. 3.	500	Robinson-2	897	8	444	1,056			
	19	Ohio	Wampler, No. 2.	506	Robinson-3	920	53	397	1,103			
	20	Ohio	Wampler, No. 1.	500	Robinson-2	879	22	420	1,080			
	21	Ohio	Leonard, No. 4.	494	Robinson-1	845	21	379	1,121		40	
	22	Ohio	Leonard, No. 1.	499	Robinson-3	930	18	345	1,155			
	23	Ohio	Leonard, No. 2.	496	Robinson-2	852	20	430	1,070			
	24	Ohio	Leonard, No. 3.	484	Robinson-3	905	49	347	1,153		75	
	25	Ohio	Renchen, No. 6.	483	Robinson-1	936	24	400	1,100			
	26	Ohio	Renchen, No. 5.	495	Robinson-3	838	5	486	1,064		75	
					do	941	26	344	1,156			Gas, 935 feet.
					do	937	38	447	1,053	941		Salt water, 965 feet.
					do	960	27	438	1,062		60	Gas, 945 feet.
					do	930	26	454	1,046	962	10	Gas, 950 feet. Salt water, 977 feet.
					Robinson-1	830		347	1,154			Gas, 830 feet.
					Robinson-2	890		396	1,104			
					Robinson-3	925		441	1,059		42	Salt water, 964 feet.
					do	827	10	344	1,156			
					do	905	20	422	1,078			
					do	909	26	414	1,086		35	



Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
26— S. E....	21	Whitaker.....	Doucummen, No. 4.....	487	Shallow.....	475	5	+12	1,512	.....	.....	.....	.....
					Robinson-2.....	898	.....	411	1,089	.....	.....	.....	.....
					Robinson-3.....	921	33	434	1,066	921	.....	.....	.....
	22	Whitaker.....	Doucummen, No. 3.....	486	Robinson-2.....	895	.....	409	1,091	.....	940	.....	Quit in sand
					Robinson-3.....	920	20	434	1,066	.....	.....	.....	.....
	23	Whitaker.....	Doucummen, No. 2.....	487	Robinson-2.....	895	.....	408	1,092	.....	944	.....	Quit in sand
					Robinson-3.....	918	26	431	1,069	918	.....	.....	.....
	24	Whitaker.....	Doucummen, No. 1.....	486	Robinson-1.....	820	10	334	1,166	.....	940	.....	Quit in sand
					Robinson-3.....	920	20	434	1,066	920	.....	.....	.....
	25	Ohio.....	Fry, No. 1.....	482	Robinson-1.....	818	20	336	1,164	.....	.....	.....	.....
					Robinson-3.....	896	22	414	1,086	.....	.....	.....	.....
	26	Ohio.....	Fry, No. 2.....	484	Robinson-1.....	822	.....	338	1,162	.....	.....	.....	.....
					Robinson-3.....	914	14	430	1,070	920	.....	.....	.....
27— N. E....	27	Ohio.....	Fry, No. 3.....	488	Robinson-1.....	835	27	347	1,153	.....	.....	100	.....
					Robinson-3.....	920	12	432	1,068	.....	.....	.....	Gas, 820 feet.
	28	Ohio.....	Fry, No. 4.....	485	Robinson-1.....	820	12	335	1,165	900	.....	128	Gas, 830 feet.
					Robinson-3.....	895	25	410	1,090	.....	.....	.....	.....
	29	Ohio.....	Fry, No. 5.....	481	Robinson-1.....	830	15	349	1,151	.....	.....	80	.....
					Robinson-3.....	899	13	418	1,082	900	.....	.....	.....
	30	Red Bank.....	Fry, No. 2 "R B".....	484	Robinson-1.....	810	30	326	1,174	.....	.....	100	.....
					Robinson-2.....	874	16	390	1,110	.....	.....	.....	.....
	31	Red Bank.....	Fry No. 2 "B".....	477	Robinson-1.....	832	.....	355	1,145	882	.....	100	.....
					Robinson-2.....	882	30	405	1,095	.....	.....	.....	.....
	32	Red Bank.....	Fry, No. 1 "B".....	487	Robinson-1.....	824	.....	337	1,163	.....	.....	75	.....
					Robinson-2.....	900	24	413	1,087	902	.....	.....	.....
	33	Red Bank.....	Fry, No. 3 "B".....	478	Robinson-1.....	812	13	334	1,166	.....	.....	100	Gas, 830 feet.
					Robinson-2.....	888	38	410	1,090	.....	.....	.....	.....
	34	Red Bank.....	Fry, No. 1 "R B".....	479	Robinson-1.....	825	.....	346	1,154	915	.....	100	Gas, 830 feet.
27— N. E....	1	Ohio.....	McColpin, No. 16.....	489	Robinson-3.....	901	19	422	1,078	.....	.....	75	Gas, 946 feet.
	2	Ohio.....	McColpin, No. 14.....	482	Robinson-2.....	835	5	346	1,154	946	.....	120	Gas, 862 feet.



## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
27—S. E....	10	Ohio.....	C. Dennis, No. 15.....	480	Robinson-2.....	862	26	382	1, 118	866	.....	200	Gas, 865 feet.....
	11	Ohio.....	C. Dennis, No. 21.....	485	do.....	873	32	388	1, 112	875	.....	150	Gas, 874 feet.....
	12	Ohio.....	C. Dennis, No. 16.....	478	do.....	885	34	377	1, 123	880	.....	200	Gas, 880 feet.....
	13	Ohio.....	C. Dennis, No. 10.....	486	do.....	890	.....	404	1, 096	895	.....	50	Gas, 891 feet.....
	14	North Fork.....	G. Walker, No. 11.....	487	Robinson-1.....	853	9	366	1, 134	.....	.....	.....	.....
	15	North Fork.....	G. Walker, No. 7.....	489	Robinson-2.....	884	44	397	1, 103	.....	.....	.....	.....
	16	North Fork.....	C. Walker, No. 2.....	487	Robinson-2.....	872	26	383	1, 117	.....	.....	.....	.....
	17	North Fork.....	C. Walker, No. 1.....	489	Robinson-3.....	920	30	431	1, 089	.....	.....	.....	.....
	18	North Fork.....	C. Walker, No. 5.....	495	Stray.....	810	.....	323	1, 177	.....	.....	.....	.....
	19	North Fork.....	C. Walker, No. 3.....	500	Robinson-1.....	867	26	370	1, 130	.....	917	.....	.....
	20	North Fork.....	C. Walker, No. 6.....	493	Robinson-2.....	884	.....	407	1, 093	.....	.....	.....	.....
	21	North Fork.....	C. Walker, No. 4.....	489	Robinson-1.....	867	.....	378	1, 122	.....	.....	.....	.....
	22	North Fork.....	Hicks, No. 1.....	491	Robinson-2.....	885	10	396	1, 104	.....	.....	.....	.....
	23	North Fork.....	Hicks, No. 14.....	493	Robinson-3.....	912	26	423	1, 077	931	.....	.....	Salt water, 912 feet.....
	24	North Fork.....	Hicks, No. 7.....	496	Robinson-1.....	872	85	377	1, 123	.....	.....	.....	.....
					do.....	876	6	376	1, 124	.....	.....	.....	.....
					Robinson-2.....	895	.....	395	1, 106	.....	.....	.....	.....
					Robinson-3.....	913	24	413	1, 087	.....	.....	.....	.....
					Robinson-2.....	897	10	404	1, 098	.....	.....	.....	.....
					Robinson-2 (?).....	921	11	428	1, 072	.....	.....	.....	.....
					Robinson-3.....	965	11	462	1, 038	.....	972	.....	.....
					Robinson-1.....	840	37	351	1, 149	865	.....	.....	.....
					Robinson-2.....	897	14	408	1, 092	897	.....	.....	.....
					Robinson-3.....	936	33	447	1, 033	.....	.....	.....	.....
					Robinson-2.....	875	15	384	1, 116	.....	.....	.....	.....
					Robinson-3.....	909	.....	418	1, 082	.....	934	.....	.....
					Stray.....	922	12	429	1, 071	.....	.....	.....	.....
					Robinson-3.....	946	35	453	1, 047	.....	.....	.....	.....
					Robinson-1.....	870	25	374	1, 126	.....	.....	.....	.....
					Robinson-2.....	900	45	404	1, 096	.....	950	.....	.....

16	Jennings	McCrillis, No. 3	475	Robinson-2	867	14	392	1,108	812	930	Salt water
17	Jennings	McCrillis, No. 6	471	Robinson-3	900	20	426	1,075	812	906	Quit in sand
18	Jennings	McCrillis, No. 8	476	Robinson-4	925	5	450	1,050	829	912	Quit in sand
19	Jennings	McCrillis, No. 22	477	Robinson-1	812	71	341	1,159	860	918	Quit in sand
				Robinson-3	896	25	425	1,075	860		
				Stray	810	18	334	1,166			
				Robinson-2	874	6	398	1,102			
				Robinson-3	906	20	430	1,070			
				Robinson-1	835	18	358	1,142			
				Robinson-2	880	14	383	1,117			
				Robinson-3	904	14	427	1,073			
1	Brenneman & McDonald	G. Dee, No. 1	461	Robinson-1	866	14	405	1,065	866		
2	Brenneman & McDonald	G. Dee, No. 2	460	Robinson-2	892	30	431	1,069			
3	Brenneman & McDonald	G. Dee, No. 3	463	Robinson-3	943	27	482	1,018			
4	Brenneman & McDonald	Wekeman, No. 5	485	Robinson-1	863	10	403	1,097	975		
5	Brenneman & McDonald	Wekeman, No. 4	497	Robinson-2	891	83	431	1,069			
6	Brenneman & McDonald	Wekeman, No. 1	460	Robinson-1	860	22	397	1,103			
7	Brenneman & McDonald	Wekeman, No. 2	496	Robinson-2	894	24	431	1,069			
8	Brenneman & McDonald	Wekeman, No. 3	497	Robinson-3	890	19	405	1,065			
9	McBride	Muchmore, No. 6	518	Robinson-1	937	51	452	1,048	988		
10	McBride	Muchmore, No. 2	465	Stray	860	8	363	1,137			
11	McBride	Muchmore, No. 1	521	Robinson-1	896	20	399	1,101	925		
12	McBride	Muchmore, No. 5	507	Robinson-3	822	92	362	1,138			
13	McBride	Muchmore, No. 7	479	Robinson-1	921	24	461	1,039	945		
1	McBride	Muchmore, No. 3	517	Robinson-3	892	37	396	1,104	996		
2	McBride	Muchmore, No. 4	509	Robinson-1	974	22	478	1,022			
3	Unknown	Caywood, No. 1	515	Robinson-3	941	19	444	1,056			
1	Mahutska	Ormiston, No. 1	505	Robinson-2	980	5	483	1,017	987		
2	Thompson	Caywood, No. 2	499	Stray	827	13	385	1,115			
3	Thompson	Caywood, No. 1	499	Robinson-1	903						
1	Pure	Heck, No. 5	496	Robinson-2	814		307	1,193			
2	Ohio	Zeigler, No. 4	497	Robinson-3	915	8	408	1,062			
3	Brenneman & McDonald	Zeigler, No. 3	479	Robinson-1	945	10	438	1,062	945		
4	Red Bank	Zeigler, No. 2	464	Robinson-2	912	53	433	1,067	916		
5	Red Bank	Zeigler, No. 1	471	Robinson-3	938	23	421	1,079			
				Robinson-1	912	8	403	1,097	912		
				Robinson-2	941	16	432	1,068	941		
				Robinson-3	994	7	479	1,021	1,074	1	Well abandoned
				Robinson-1	903	5	398	1,102			
				Robinson-2	929	15	424	1,076			
				Robinson-3	995	20	496	1,004			
				Robinson-1	996	19	497	1,003	1,015		
				Robinson-2	935	7	439	1,061	1,015		
				Robinson-3	872	22	468	1,032			
				Robinson-1	902	14	393	1,107			
				Robinson-2	918	10	423	1,077			
				Robinson-3	880	21	439	1,061	939		
				Robinson-1	902		431	1,069	886		
				Robinson-2		51					



Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
34— N. E...	14	Stephens, Hawkins & Steele	Waggoner, No. 2	496	Robinson-1.....	867	7	371	1,129	.....	.....	.....	.....
					Robinson-2.....	887	6	391	1,109	.....	.....	.....	.....
	16	Craig & Lowrie	Anderson, No. 1	495	Robinson-3.....	919	24	423	1,077	.....	.....	.....	No record
	17	Stephens, Hawkins & Steele	Waggoner, No. 3	493	Robinson-1.....	864	13	371	1,129	.....	.....	.....	.....
					Robinson-2.....	886	14	393	1,107	.....	.....	.....	.....
	18	Stephens, Hawkins & Steele	Padgett, No. 6	493	Robinson-3.....	907	31	414	1,086	.....	.....	.....	.....
	19	Stephens, Hawkins & Steele	Padgett, No. 5	497	Robinson-4.....	942	13	449	1,051	.....	958	.....	.....
	20	Porter	Church Lot, No. 1	503	.....	.....	.....	.....	.....	.....	.....	.....	No record
	21	Parker-Edwards	Hardin, No. 4	500	Robinson-1.....	878	14	378	1,122	.....	.....	.....	do
					Robinson-2.....	907	17	407	1,083	.....	.....	.....	do
	22	Parker Edwards	Hardin, No. 3	494	Robinson-3.....	928	41	428	1,072	.....	969	.....	.....
					Robinson-1.....	876	20	382	1,118	.....	.....	.....	.....
	23	Parker-Edwards	Hardin, No. 2	490	Robinson-2.....	906	14	402	1,098	.....	.....	.....	.....
					Robinson-3.....	925	26	431	1,089	.....	951	.....	.....
	24	Stephens, Hawkins & Steele	Padgett, No. 4	493	Robinson-1.....	859	11	369	1,131	.....	942	.....	.....
					Robinson-2.....	881	46	391	1,109	.....	.....	.....	No record
	25	Stephens, Hawkins & Steele	Padgett, No. 2	492	.....	.....	.....	.....	.....	.....	.....	.....	do
	26	Stephens, Hawkins & Steele	Padgett, No. 1	495	.....	.....	.....	.....	.....	.....	.....	.....	do
	27	Stephens, Hawkins & Steele	Padgett, No. 3	495	.....	.....	.....	.....	.....	.....	.....	.....	do
					Robinson-1.....	862	14	366	1,134	.....	.....	.....	.....
	28	Parker-Edwards	Hardin, No. 1	496	Robinson-2.....	890	14	394	1,106	.....	.....	.....	.....
					Robinson-3.....	914	16	418	1,082	.....	.....	.....	.....

S. W.	No.	Name	Depth	Pressure	Temperature	Specific Gravity	Analysis	Remarks
S. W.	11	Wabash.	485	907	512	988		
	12	Red Bank.	483	1,110	517	983		
	13	Ohio.	486	1,080	528	943	1,055	Dry Salt water, 1,055 feet.
	14	Ohio.	488	1,014	528	972	1,035	Well abandoned.
	1	McBride.	486	908	507	983		
	2	McBride.	476	1,030	542	955	1,054	Dry
	3	McBride.	487	984	488	1,032		
	4	McBride.	476	985	499	991		Well abandoned.
	5	McBride.	487	972	498	1,004		Salt water.
	6	McBride.	487	987	518	982		
	7	McBride.	488	988	490	1,000		
	8	McBride.	488	974	486	1,014		Salt water.
	9	McBride.	488	1,030	512	983		
	10	McBride.	488	987	497	1,033		Salt water.
	11	McBride.	488	949	509	991	1,030	Dry
S. E.	1	McBride.	485	949	444	1,036		Salt water.
	2	McBride.	484	988	481	1,000		do.
	3	McBride.	483	985	481	1,019		do.
	4	McBride.	483	985	481	1,000		Salt water.
	5	McBride.	483	928	445	1,055		
	6	McBride.	483	929	520	991		
	7	McBride.	483	1,015	532	985		
	8	McBride.	483	1,061	497	1,003	985	Gas, 985 feet.
	9	McBride.	483	1,061	531	919		Salt water.
	10	McBride.	483	1,081	493	1,001		
	11	McBride.	483	1,078	493	1,007	980	Dry Salt water.
	12	McBride.	483	975	493	1,007	980	Gas, 980 feet.
	13	McBride.	483	947	487	1,035	980	Gas, 950 feet.
	14	McBride.	483	950				No record.
	15	McBride.	483	950				No record.
S. N. E.	1	Ohio.	475	950	475	1,025	975	150
	2	Ohio.	475	952	476	1,024		35 Gas, 954 feet.
	3	Ohio.	475	953	480	1,020	953	Dry No record.
	4	Ohio.	475	950	472	1,028	960	20 Gas, 951 feet.
	5	Ohio.	475	941	461	1,036		Samples were saved and studied from this well and the log published elsewhere in this report.
	6	Ohio.	475	970	425	1,075		
	7	Ohio.	475	982	386	1,114	984	5 Gas, 984 feet.
	8	Ohio.	475	972	395	1,108	970	60 Gas, 974 feet.
	9	Ohio.	475	955	380	1,110	970	6 Gas, 970 feet. Salt water, 900 feet.
	10	Ohio.	475	973	399	1,101	983	45 Gas, 983 feet.
	11	Ohio.	475	973	455	1,045		Salt water.
	12	Ohio.	475	973	402	1,098	980	20 Gas, 978 feet.
	13	Ohio.	475	960	457	1,073		
	14	Ohio.	475	965	455	1,045		Salt water.
	15	Ohio.	475	965	388	1,102	975	18 Gas, 975 feet.
	16	Ohio.	475	980	420	1,060	913	Salt water, 913 feet.

## Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
34— S. E....	28	Parker-Crowly.....	Barnett, No. 6.....	486	.....	.....	.....	.....	.....	.....	.....	No record.....
35— N. E....	1	Red Bank.....	C. Doucumen, No. 1.....	486	Robinson-3.....	940	25	454	1,046	.....	100	.....
	2	Red ank.....	C. Doucumen, No. 2.....	487	Robinson-1.....	810	.....	323	1,177	.....	.....	.....
N. W....	3	Red Bank.....	C. Doucumen, No. 3.....	483	Robinson-3.....	929	.....	442	1,058	929	.....	.....
	4	Ohio.....	C. Doucumen, No. 1.....	470	Robinson-4.....	940	32	453	1,047	940	40	.....
	5	Ohio.....	C. Doucumen, No. 4.....	479	Robinson-2.....	917	41	424	1,076	.....	.....	.....
	1	Ohio.....	Shipman, No. 3.....	485	Shallow.....	419	9	+51	1,551	.....	.....	.....
	2	Ohio.....	Shipman, No. 2.....	479	do.....	456	10	+14	1,514	.....	.....	.....
	3	Ohio.....	Shipman, No. 5.....	495	Robinson-1.....	815	16	345	1,155	962	Gas	3,000,000 cubic feet of gas.
	4	Ohio.....	Shipman, No. 4.....	499	Robinson-1.....	800	.....	321	1,179	818	Gas	Gas, 804 feet.....
	5	Ohio.....	Shipman, No. 1.....	503	do.....	825	.....	340	1,160	.....	.....	.....
	6	Ohio.....	Shipman, No. 6.....	507	Robinson-2.....	938	.....	453	1,047	940	80	Salt water, 987 feet
	7	Ohio.....	Shipman, No. 7.....	503	Robinson-1.....	812	140	333	1,167	.....	Gas	Gas, 820 feet.....
S. W....	1	Watkins.....	Shipman, No. 1.....	490	Robinson-3.....	939	25	444	1,056	940	40	Gas, 945 feet.....
	2	Red Bank.....	A. Shipman, No. 1.....	474	Robinson-1.....	849	.....	350	1,150	960	75	Gas, 958 feet.....
	3	Finley.....	Marshall, No. 4.....	472	Robinson-3.....	858	15	459	1,041	850	20	Gas, 958 feet.....
	4	Finley.....	Marshall, No. 1.....	471	Stray.....	910	112	407	1,093	.....	.....	Salt water, 1,068 feet.....
	5	Finley.....	Marshall, No. 3.....	470	Robinson-3.....	896	.....	389	1,111	975	8	Gas, 896 feet.....
					Robinson-1.....	975	6	468	1,032	.....	.....	Salt water, 987 feet.....
					Robinson-2.....	852	6	349	1,151	940	12	.....
					Robinson-3.....	904	.....	401	1,099	958	Dry	No record.....
					Robinson-1.....	802	30	328	1,172	.....	Gas	Gas, 802 feet.....
					Robinson-3.....	877	22	406	1,085	.....	.....	.....
					Robinson-1.....	781	13	310	1,190	.....	.....	.....
					Robinson-2.....	847	.....	376	1,124	.....	.....	.....
					Robinson-3.....	895	20	424	1,076	.....	.....	.....
					Robinson-2.....	845	23	375	1,125	.....	.....	.....
					Robinson-3.....	898	15	428	1,072	.....	.....	.....



Crawford County—Martin Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
36— N. E...	20	Ohio.....	Adams, No. 6.....	452	Robinson-1.....	803	27	351	1,149	805	15	Gas, 805 feet.....
	21	Ohio.....	Adams, No. 8.....	453	do.....	802	26	349	1,151	805	45	Gas, 803 feet.....
	22	Ohio.....	Adams, No. 2.....	467	do.....	808	37	341	1,159	815	200	Gas, 815 feet.....
	23	Ohio.....	Adams, No. 7.....	462	do.....	790	32	328	1,172	808	40	Gas, 796 feet.....
N. W...	1	American Oil & Development Co.....	Richart, No. 5.....	464	do.....	814	31	350	1,150	833		
	2	American Oil & Development Co.....	Richart, No. 4.....	475	do.....	824	41	349	1,151		100	
	3	American Oil & Development Co.....	Richart, No. 3.....	467	Robinson-2.....	863	32	396	1,104			
	4	American Oil & Development Co.....	Richart, No. 6.....	461	Robinson-3.....	925	17	453	1,042	926	50	
	5	American Oil & Development Co.....	Richart, No. 8.....	464	Shallow.....	640	14	179	1,321			
	6	American Oil & Development Co.....	Richart, No. 26.....	455	Robinson-1.....	792	24	331	1,169	811		
	7	American Oil & Development Co.....	Richart, No. 8.....	464	Robinson-2.....	850	30	389	1,111	876		
	8	Red Bank.....	Richart, No. 15.....	468	Stray.....	767	56	303	1,197		100	
	9	Red Bank.....	Mitchell, No. 1.....	468	Robinson-1.....	787	32	332	1,168	792		
	10	Ohio.....	Mitchell, No. 2.....	465	Robinson-2.....	829	5	374	1,126			
	11	Ohio.....	Mitchell, No. 3.....	480	Robinson-3.....	850	42	395	1,105			
	12	Ohio.....	Mitchell, No. 5.....	475	Robinson-1.....	807	26	339	1,161		100	
	13	Ohio.....	Adams, No. 1.....	475	do.....	804	24	336	1,164	820	100	
	14	Ohio.....	Adams, No. 1.....	454	do.....	790	27	325	1,175		20	No record.....
	15	Wabash.....	Doucummen, No. 1.....	456	do.....	791	19	335	1,165		25	
	16	Ohio.....	Doucummen, No. 6.....	464	do.....	806	19	331	1,169	818		
					do.....	826	10	350	1,150	975		
					do.....	804	10	350	1,150	830		Gas, 827 feet.....
					Robinson-1.....	775	16	319	1,181	791		Gas, 806 feet.....
					Robinson-3.....	912	32	456	1,044			
					Robinson-2.....	854	12	390	1,110			Gas, 860 feet.....
					Robinson-3.....	906	19	442	1,058	910	5	

Docummen, No. 5.	453	886	10	434	1,066	323	40	.....
Docummen, No. 3.	479	900	11	330	1,170	323	30	.....
Docummen, No. 7.	468	791	11	323	1,177	323	30	.....
Docummen, No. 2.	463	808	34	341	1,150	341	100	.....
Sparks, No. 1.	465	788	34	326	1,174	326	23	Gas, 807 feet.
Marwell, No. 3.	451	888	12	406	1,094	406	23	Salt water, 927 feet.
Marwell, No. 6.	447	867	5	401	1,089	401	Gas	.....
Marwell, No. 7.	448	903	10	437	1,063	437	63	.....
Pope, No. 3.	442	830	10	376	1,121	376	.....	Salt water, 902 feet.
Pope, No. 16.	448	912	15	461	1,039	461	.....	.....
Pope, No. 2.	444	773	20	326	1,174	326	.....	.....
Pope, No. 13.	441	851	11	443	1,057	443	.....	.....
Pope, No. 1.	441	775	8	333	1,167	333	.....	.....
Pope, No. 8.	443	888	12	446	1,054	446	.....	.....
Sparks, No. 4.	460	770	32	324	1,176	324	.....	.....
Sparks, No. 1.	454	773	27	359	1,171	359	.....	.....
Sparks, No. 13.	468	830	27	406	1,094	406	.....	.....
Sparks, No. 17.	467	885	33	456	1,056	456	.....	.....
Sparks, No. 15.	467	767	33	326	1,174	326	.....	.....
Sparks, No. 14.	465	783	38	341	1,189	341	.....	.....
Sparks, No. 12.	466	857	13	416	1,094	416	.....	.....
Sparks, No. 16.	465	775	26	339	1,168	339	.....	.....
Sparks, No. 9.	463	846	15	405	1,097	405	.....	.....
Sparks, No. 10.	461	792	28	332	1,166	332	.....	.....
Sparks, No. 18.	470	880	45	464	1,564	464	.....	.....
Sparks, No. 6.	453	799	23	340	1,150	340	.....	.....
Sparks, No. 5.	448	815	33	348	1,152	348	.....	.....
Sparks, No. 19.	448	810	30	343	1,157	343	.....	.....
Marwell, No. 5.	445	851	8	384	1,116	384	.....	.....
Marwell, No. 1.	452	806	23	343	1,157	343	.....	.....
Richart, No. 27.	453	824	26	358	1,142	358	.....	.....
Richart, No. 14.	453	833	15	358	1,142	358	.....	.....
Richart, No. 16.	450	851	14	396	1,114	396	.....	.....
Richart, No. 10.	461	835	20	363	1,127	363	.....	.....
Richart, No. 8.	453	804	33	343	1,157	343	.....	.....
Richart, No. 6.	450	817	22	347	1,153	347	.....	.....
Richart, No. 5.	448	769	23	336	1,154	336	.....	.....
Richart, No. 3.	443	772	22	324	1,176	324	.....	.....
Richart, No. 2.	443	805	20	343	1,157	343	.....	.....
Richart, No. 1.	443	772	27	327	1,173	327	.....	.....
Richart, No. 1.	443	790	6	336	1,168	336	.....	.....
Richart, No. 1.	443	690	25	428	1,052	428	.....	.....
Richart, No. 1.	443	768	30	336	1,164	336	.....	.....
Richart, No. 1.	443	737	34	335	1,165	335	.....	.....
Richart, No. 1.	443	795	20	345	1,155	345	.....	.....
Richart, No. 1.	443	917	20	467	1,033	467	.....	.....

S W

E. E.

Crawford County—Martin Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
36—S. E...	21	American Oil & Development Co.	Richart, No. 17.	445	Robinson-1.	808	8	363	1, 137	808	...	35	...
	21				Robinson-2.	818	11	373	1, 127	...	...	...	...
	21				Robinson-3.	931	...	486	1, 014	...	...	...	Salt water, 931 feet.
	22		Mann, No. 5.	450	Robinson-1.	803	18	353	1, 147	807	...	50	...
	23				Robinson-3.	923	12	473	1, 027	...	...	...	Salt water, 930 feet.
	23				Robinson-1.	900	32	345	1, 156	...	...	40	...
	24		Mann, No. 7.	455	do.	819	14	364	1, 136	...	...	...	...
	24				Robinson-3.	911	26	456	1, 044	...	...	...	...
	25				Robinson-1.	815	15	365	1, 135	...	...	...	...
	25		Mann, No. 8.	450	Robinson-3.	919	...	469	1, 031	938	...	...	...
	26				Robinson-1.	802	19	357	1, 143	816	...	...	...
	26				Robinson-3.	912	26	467	1, 033	915	...	40	Gas, 915 feet.
	27		Mann, No. 4.	445	Robinson-1.	796	35	345	1, 155	801	...	Show	...
	27				Robinson-3.	893	41	443	1, 057	...	...	40	...
	28		Mann, No. 3.	450	Robinson-1.	815	5	365	1, 135	...	...	...	...
	28				Robinson-3.	901	32	451	1, 049	...	...	80	...
	29				Robinson-3.	908	47	457	1, 043	...	...	40	...

## Crawford County—Oblong Township.

Sand.	Thickness penetrated		Altitude above datum plane—feet.	Oil depth—feet.	Total depth—feet.	Initial product—barrels	Remarks.
	Depth to top—feet.	Thickness penetrated					
885	12	12	384	1,115			Salt water, 976 feet
920	25	25	419	1,081	940		Coal
973	2	2	452	1,038	983		224 and 450 feet.
							This formation contained
925	45	45	415	1,085	970		pebbles.
924	47	47	415	1,083	940	10	Coal 226 feet.
974	3	3	465	1,035	977		Gas, 924 feet.
930	29	29	428	1,072		Show	Quit in sand.
954	13	13	403	1,098		50	
855	64	64	381	1,119	940	10	
859	10	10	377	1,163	975		
934	42	42	432	1,068		250	
841	15	15	371	1,129			
890	44	44	410	1,090			
765			367	1,203	968		Salt water, 968 feet.
890	28	28	428	1,073			
855	5	5	353	1,142			
937	55	55	440	1,060		Light	
909	39	39	433	1,061	919	Light	Salt water, 947 feet.
923	31	31	447	1,053	937	100	
945	24	24	438	1,033	946	6	
949	29	29	433	1,032	961	25	
967	20	20	449	1,031	959	25	
960	24	24	453	1,047	964	25	Salt water, 964 feet.
924	26	26	417	1,083			
953	18	18	446	1,054	971	20	Quit in sand.
935	25	25	426	1,074		do.	
966	21	21	457	1,043	987	76	Salt water, 978 feet.
946	24	24	348	1,153		Gas, 846 feet, 2,000,000 cu-	
						bic feet, daily.	
919	11	11	421	1,079	983	Gas	



## Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
2— N. W.	2	Bailey & Fritz.	Boa, No. 3.	473	800	10	324	1,172				No record.
	3	Bailey & Fritz.	Roa, No. 1.	472	820	20	348	1,152				
	4	Bailey & Fritz.	Pureell, No. 1.	468	908	23	431	1,099		940		
	5	Bailey & Fritz.	Pureell, No. 2.	465	904	20	382	1,084	904			Well abandoned. Salt water, 924 feet.
	6	Bailey & Fritz.	Pureell, No. 3.	465	835	9	370	1,130				
	7	Bailey & Fritz.	Pureell, No. 4.	465	927	9	462	1,038	927			
	8	Bailey & Fritz.	Pureell, No. 5.	464	860	20	395	1,085				
	9	Bailey & Fritz.	Pureell, No. 6.	472	919	20	454	1,045	916			
	10	Bailey & Fritz.	Pureell, No. 7.	464	909	25	445	1,055	920			
	11	Bailey & Fritz.	Reed, No. 1.	466	942	25	470	1,020				
	12	Bailey & Fritz.	Reed, No. 2.	466	935	20	395	1,124	935			Gas, 940 feet.
	13	Bailey & Fritz.	Reed, No. 3.	462	933	16	460	1,031	933			Gas, 925 feet.
	14	Bailey & Fritz.	Reed, No. 4.	462	938	8	473	1,027	933			Salt water, 971 feet.
	15	Bailey & Fritz.	Reed, No. 5.	474	870	20	395	1,114	890			
	16	Bailey & Fritz.	Reed, No. 6.	474	870	10	390	1,120	960			
	17	Bailey & Fritz.	Reed, No. 7.	474	940	9	470	1,030	940			
8 W.	1	Fisher.	Miller, No. 10.	494	949	20	465	1,035	951			
	2	Fisher.	Miller, No. 9.	494	949	20	465	1,035	951			
	3	Fisher.	Miller, No. 8.	497	923	10	356	1,144				
	4	Fisher.	Miller, No. 7.	499	923	13	465	1,045	922			
	5	Fisher.	Miller, No. 6.	499	900	22	431	1,089	925			Quit in sand. Well abandoned.
	6	Fisher.	Miller, No. 5.	499	933	23	458	1,042				
	7	Fisher.	Miller, No. 4.	499	1,305	4	811	699				
	8	Fisher.	Miller, No. 3.	499	1,420	20	925	575				
8 W.	1	Wark.	Lackey, No. 2.	495	1,420	20	925	575				
	2	Wark.	Lackey, No. 1.	495	1,420	20	925	575				
	3	Wark.	Lackey, No. 3.	495	1,420	20	925	575				
	4	Wark.	Lackey, No. 4.	495	1,420	20	925	575				



## Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
5—N. E..	3	American Oil and Development Co.	Short, No. 15.	467	Robinson-1	811	20	344	1,156	950	Dry	
		American Oil and Development Co.	Short, No. 14.	468	Stray	800	17	332	1,168			
					Robinson-1	828	19	260	1,140			
					Robinson-2	860	20	282	1,118			Salt water, 865 feet.
	5	American Oil and Development Co.	Short, No. 13.	460	Robinson-1 (?)	806	49	346	1,154			
					Robinson-3	897	5	437	1,063			
	6	American Oil and Development Co.	Short, No. 10.	483	Stray	827	12	344	1,156			
					Robinson-1	860	10	267	1,133			
					Robinson-2	882	10	399	1,101			
	7	Parker & Edwards	W. Buck, No. 7.	464	do	874	24	410	1,090			Salt water, 885 feet. Well abandoned.
	8	Parker & Edwards	W. Buck, No. 11.	461	Robinson-3	893		432	1,068			
					Robinson-4	906		447	1,053			
	9	Parker & Edwards	W. Buck, No. 10.	460	Robinson-1	823	15	263	1,137			
					Robinson-3	885	25	425	1,075	910		
	10	Ohio.	D. Kirtland, No. 1.	478	Robinson-1	918	28	379	1,121	862		
	11	Ohio.	D. Kirtland, No. 5.	476	Robinson-3	808	68	332	1,108	838		Salt water, 953 feet.
	12	Ohio.	D. Kirtland, No. 2.	471	do	828	49	357	1,143	852	200	
	13	Red Bank.	D. Kirtland, No. 2 (east).	475	do	850	27	375	1,125	881		
	14	Red Bank.	D. Kirtland, No. 3 (east).	475	do	845	20	370	1,130	885		
	15	Red Bank.	D. Kirtland, No. 1 (east).	478	do	855	25	377	1,123			
	16	Brenneman & McDonald.	O. Kirtland, No. 2.	477	Robinson-3	916	14	438	1,062	950	150	
					Robinson-1 (?)	815	54	338	1,162	835		Gas, 821 feet.
					Robinson-3	893	21	416	1,084	893		
	17	Brenneman & McDonald.	O. Kirtland, No. 3.	475	Robinson-1 (?)	801	55	326	1,174	829		
					Robinson-2	858	22	383	1,117			Salt water, 858 feet.
					Robinson-3	897	14	422	1,078	913		

S. W...	12	Treat, Crawford & Treat.	Birch, No. 12.	496	Robinson-1	896	39	400	1,100	918	50	
	13	Treat, Crawford & Treat.	Birch, No. 13.	493	Robinson-2	913	16	417	1,083	913	100	
	14	Red Bank.	E. Miller, No. 1 "B"	499	Robinson-1	880	33	387	1,113	925	400	
	15	Wabash.	E. Miller, No. 1	500	Robinson-3	925	28	432	1,083			
	16	Wabash.	E. Miller, No. 2	495	Robinson-2	900	29	381	1,189			
	17	Wabash.	E. Miller, No. 3	498	Robinson-1	912	20	413	1,087			
	18	Red Bank.	E. Miller, No. 1 "RB"	486	Robinson-2	881	58	381	1,119			
	19	Ohio.	E. Miller, No. 1	468	Robinson-1	920	58	430	1,070			
	20	Ohio.	E. Miller, No. 2	496	Robinson-2	893	10	396	1,102			
	21	Ohio.	E. Miller, No. 4	495	do.	893	39	395	1,105			
	22	Ohio.	E. Miller, No. 6	496	Robinson-3	890	25	404	1,086			
	23	Ohio.	E. Miller, No. 7	499	do.	924	6	438	1,082			
	24	Mahutska.	P. Miller, No. 10.	500	Stray	894	38	426	1,074			
	25	Mahutska.	P. Miller, No. 6	495	Robinson-2	846	12	360	1,150			
	26	Mahutska.	P. Miller, No. 3	496	Robinson-1	920	21	494	1,076			
	27	Mahutska.	P. Miller, No. 1	469	Robinson-2	894	12	399	1,101			
	28	Mahutska.	P. Miller, No. 11	469	do.	885	5	389	1,111			
	1	Red Bank.	J. Taylor, No. 1	485	do.	885	32	386	1,114	916		
	2	Red Bank.	J. Taylor, No. 2	477	Stray	868	28	401	1,099			Gas, 924 feet.
	3	Ohio.	J. Taylor, No. 1	487	Robinson-1	895	36	402	1,038	924	200	
	4	Ohio.	Hamilton, No. 1	476	Robinson-3	867	12	462	1,038	967	200	
	5	Ohio.	Hamilton, No. 6	484	Robinson-2	870	24	374	1,126			
	6	Ohio.	Hamilton, No. 7	488	Robinson-1	914	12	418	1,082			
	7	Ohio.	J. Taylor, No. 6	490	Robinson-2	830	5	361	1,139			
	8	Ohio.	J. Taylor, No. 2	479	Robinson-1	895	32	426	1,074			
S. E...	1	Ohio.	Hamilton, No. 5	501	Robinson-2	852	6	383	1,117			
	2	Ohio.	Hamilton, No. 4	506	Robinson-1	902	31	402	1,067			
	3	Ohio.	Hamilton, No. 2	511	Robinson-3	870	85	453	1,115			
	4	Ohio.	P. Miller, No. 1	511	Robinson-2	867	10	390	1,047			
	5	Ohio.	Hamilton, No. 3	505	do.	889	25	402	1,110			
	6	Ohio.	Hamilton, No. 8	504	Robinson-1	926	38	450	1,050			
	7	Ohio.	Hamilton, No. 9	507	Robinson-2	902	43	418	1,062			
					Robinson-4	892	32	404	1,096			
					Robinson-1	1,053		563	937			
					Robinson-3	883	85	404	1,086			
					Robinson-1	929	10	450	1,050			
					Robinson-2	903	25	402	1,096			

## Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
15— N. E....	1	Mahutska.....	J. Shire, No. 2.....	492 {	Robinson-1.....	864	11	372	1,128	.....	250	.....
	2	Ohio.....	J. Shire, No. 1.....	484	Robinson-2.....	927	25	435	1,065	.....	250	First productive well drilled in the Crawford county field.....
	3	Mahutska.....	J. Shire, No. 4.....	491 {	Stray.....	849	20	358	1,142	.....	.....	.....
	4	Mahutska.....	J. Shire, No. 5.....	486	Robinson-2.....	906	22	415	1,085	.....	250	.....
	5	Mahutska.....	J. Shire, No. 6.....	481	Stray.....	840	10	354	1,146	.....	.....	.....
	6	Mahutska.....	J. Shire, No. 7.....	489	Robinson-2.....	902	25	416	1,084	.....	250	.....
	7	Red Bank.....	E. Miller, No. 4.....	486	Robinson-1.....	844	12	363	1,137	.....	250	.....
	8	Red Bank.....	E. Miller, No. 3.....	471	Robinson-2.....	909	31	428	1,072	.....	250	.....
	9	Red Bank.....	E. Miller, No. 2.....	477	Stray.....	822	10	353	1,147	.....	250	.....
	10	Ohio.....	E. Miller, No. 3.....	470	Robinson-2.....	883	26	414	1,086	.....	250	.....
	11	Ohio.....	E. Miller, No. 5.....	480	Robinson-1.....	836	46	350	1,150	.....	100	.....
	12	Ohio.....	E. Miller, No. 8.....	486	Robinson-2.....	912	13	426	1,074	.....	300	.....
	13	Mahutska.....	P. Miller, No. 7.....	488	Robinson-1.....	823	49	351	1,149	.....	200	.....
	14	Mahutska.....	P. Miller, No. 5.....	478	Robinson-2.....	904	17	433	1,067	.....	200	.....
	15	Mahutska.....	P. Miller, No. 4.....	483 {	Robinson-1.....	843	29	386	1,134	.....	.....	.....
					Robinson-2.....	908	25	431	1,089	.....	.....	.....
					Robinson-1.....	833	43	363	1,137	.....	.....	.....
					Robinson-2.....	895	24	425	1,075	.....	.....	.....
					Robinson-1.....	875	29	396	1,105	.....	.....	.....
					Robinson-3.....	921	30	441	1,059	.....	.....	.....
					Robinson-1.....	878	5	392	1,108	880	.....	Gas, 880 feet.....
					Robinson-2.....	907	41	421	1,079	917	16	.....
					Robinson-1.....	855	47	367	1,133	.....	.....	.....
					Robinson-2.....	921	32	433	1,067	930	200	.....
					Robinson-1.....	840	.....	362	1,138	.....	.....	.....
					Robinson-2.....	914	16	436	1,084	.....	20	.....
					Robinson-1.....	872	.....	384	1,116	.....	.....	.....
					Robinson-2.....	921	24	433	1,067	.....	200	.....

16	Jennings	McCullis, No. 3.	867	141	3221	1,089																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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## Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet	Band.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
15— N. W...	9	Ohio.....	Mann, No. 12.....	487	Robinson-3.....	927	.....	440	1,060	986	50	Gas, 930 feet.....
	10	Ohio.....	Mann, No. 13.....	482	..do.....	924	.....	442	1,058	930	50	Gas, 927 feet.....
	11	Ohio.....	Mann, No. 25.....	492	..do.....	940	.....	448	1,052	960	80	Gas, 945 feet.....
	12	Ohio.....	Mann, No. 24.....	494	..do.....	940	.....	446	1,054	946	100	Gas, 946 feet.....
	13	Ohio.....	Mann, No. 11.....	482	..do.....	926	55	444	1,053	940	60	Gas, 930 feet.....
	14	Ohio.....	Mann, No. 14.....	482	Robinson-2.....	910	45	428	1,072	920	80	Gas, 912 feet.....
	15	Ohio.....	Mann, No. 23.....	467	..do.....	898	22	431	1,069	910	120	Gas, 902 feet.....
	16	Ohio.....	Ricker, No. 8.....	483	Robinson-1.....	869	28	386	1,114	875	.....	Gas, 870 feet.....
	17	Ohio.....	Ricker, No. 7.....	480	Robinson-3.....	927	40	444	1,056	.....	.....	.....
	18	Ohio.....	Ricker, No. 2.....	480	Robinson-1.....	863	37	383	1,117	.....	.....	.....
	19	Ohio.....	Ricker, No. 5.....	480	Robinson-3.....	931	32	451	1,049	966	.....	.....
	20	Ohio.....	Ricker, No. 9.....	482	Robinson-2.....	916	36	436	1,064	954	.....	.....
	21	Ohio.....	Ricker, No. 3.....	482	..do.....	912	.....	432	1,068	960	.....	.....
	22	Ohio.....	Ricker, No. 6.....	481	Robinson-1.....	857	25	375	1,125	917	.....	Gas, 917 feet.....
	23	Ohio.....	Ricker, No. 1.....	480	Robinson-2.....	912	46	430	1,070	.....	.....	.....
	24	Ohio.....	Ricker, No. 4.....	482	Robinson-1.....	867	33	385	1,115	.....	.....	.....
	25	Red Bank.....	Ricker, No. 2 "R B".....	480	Robinson-2.....	911	28	429	1,071	960	.....	.....
	26	Ohio.....	Ricker, No. 3 "R B".....	481	Robinson-3.....	931	29	449	1,061	931	.....	.....
	27	Wabash.....	Ricker, No. 2.....	486	Robinson-1.....	857	35	376	1,124	.....	.....	Gas, 919 feet.....
	28	Red Bank.....	Ricker, No. 6.....	481	Robinson-2.....	912	46	431	1,069	919	.....	.....
	29	Red Bank.....	Ricker, No. 1.....	480	Robinson-1.....	855	10	375	1,126	.....	.....	.....
	30	Wabash.....	Ricker, No. 3 "R B".....	481	Robinson-2.....	916	26	436	1,064	963	.....	.....
	31	Red Bank.....	Ricker, No. 2 "R B".....	480	Robinson-3.....	849	8	369	1,131	.....	25	.....
			Ricker, No. 3 "R B".....	481	Robinson-1.....	922	19	442	1,063	.....	30	.....
			Ricker, No. 2.....	486	Robinson-2.....	860	36	379	1,121	.....	.....	.....
			Ricker, No. 2 "B".....	486	Robinson-1.....	903	34	422	1,078	.....	.....	.....
			Ricker, No. 3 "B".....	486	..do.....	921	31	436	1,066	.....	.....	.....
			Ricker, No. 4 "R B".....	484	Robinson-1.....	862	20	376	1,134	.....	.....	.....
			Ricker, No. 3.....	484	Robinson-2.....	921	29	435	1,065	.....	.....	.....
			Ricker, No. 4 "R B".....	485	Robinson-3.....	927	74	443	1,067	918	50	.....

S. W.	S. E.	1 Crescent	2	3	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000



## Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
10—												
N. W.	12	Parker and Edwards	Harbison, No. 2	458	Robinson-1	824	16	366	1,134	829		
					Robinson-2	859	6	401	1,099			
					Robinson-3	890		432	1,068		Dry	
	13	Parker and Edwards	Harbison, No. 10	456	Stray	911		453	1,047	947		
					Robinson-1	848	6	392	1,108			
					Stray	765		309	1,191			
	14	Parker and Edwards	Harbison, No. 6	456	do	821	8	365	1,135			
					Robinson-1	838	19	382	1,118			
					Robinson-2	870		414	1,086	874		
S. W.	1	Ohio	Imboden, No. 1	464	Robinson-1	847	17	383	1,117			Well abandoned
	2	Ohio	Imboden, No. 2	471	Robinson-3	930	32	459	1,041	942		
	3	Ohio	Imboden, No. 3	488	do	931	14	443	1,057			
					Stray	838	10	350	1,150			
	4	Ohio	Imboden, No. 4	488	Robinson-2	883	10	395	1,105		10	
					Robinson-3	942	29	454	1,046			
	5	Ohio	J. Lackey, No. 2	470	Robinson-2	968	14	398	1,102			
					Robinson-3	925	30	455	1,045			
	6	Ohio	J. Lackey, No. 5	487	Robinson-1	852	38	365	1,135	856	120	Gas, 856 feet
					Robinson-3	930	12	443	1,057			
	7	Ohio	J. Lackey, No. 4	491	Robinson-1	859	26	368	1,132			
					Robinson-3	944	30	453	1,047			
					Robinson-4	978		487	1,013			Salt water
	8	Ohio	J. Lackey, No. 1	490	Robinson-3	921		431	1,069	932		Gas, 921 feet
	9	Ohio	J. Lackey, No. 3	487	do	938	29	451	1,049			
	10	Mahutska	Bond, No. 7	473	Robinson-1	845	12	372	1,128			Quit in sand
					Robinson-3	906	23	433	1,067	929		
	11	Mahutska	Bond, No. 9	488	Robinson-1	863	36	375	1,125		150	Oil in slate, 949 to 954 feet
					Robinson-3	923	31	435	1,065			
	12	Mahutska	Bond, No. 8	488	Robinson-1	890	12	402	1,098			
	13	Mahutska	Bond, No. 1	492	Robinson-3	926	24	438	1,062		150	
					do	931	24	439	1,061	935	150	Gas, 931 feet. Quit in sand

2 Mahutaka.....	Bond, No. 15.....	476	823	10	356	1,144	957	Gas, 850 feet.
3 Mahutaka.....	Bond, No. 12.....	479	994	26	448	1,053	.....	.....
4 Mahutaka.....	Bond, No. 14.....	466	850	30	371	1,129	.....	150
5 Mahutaka.....	Bond, No. 10.....	480	913	30	434	1,096	.....	.....
6 Mahutaka.....	Bond, No. 11.....	475	825	21	359	1,141	935	.....
7 Red Bank.....	Littlejohn, No. 1.....	461	902	30	436	1,094	.....	.....
8 Mahutaka.....	Littlejohn, No. 3.....	478	868	11	388	1,112	.....	150
9 Ohio.....	Littlejohn, No. 1.....	476	915	33	435	1,095	.....	.....
10 Ohio.....	Littlejohn, No. 2.....	479	831	32	378	1,122	.....	.....
11 Mahutaka.....	Mitchell, No. 10.....	474	913	32	440	1,090	920	.....
12 Mahutaka.....	Mitchell, No. 8.....	474	926	6	464	1,036	976	Dry
13 Mahutaka.....	Mitchell, No. 9.....	474	890	6	383	1,118	.....	.....
14 Mahutaka.....	Mitchell, No. 7.....	479	927	27	449	1,051	933	Gas, 932 feet.
15 Mahutaka.....	Mitchell, No. 1.....	479	917	23	441	1,059	919	.....
16 Mahutaka.....	Mitchell, No. 2.....	482	887	12	406	1,092	939	.....
17 Mahutaka.....	Mitchell, No. 12.....	478	875	15	396	1,104	.....	250
18 Mahutaka.....	Mitchell, No. 11.....	477	850	17	376	1,124	.....	Gas, 850 feet.
19 Mahutaka.....	Mitchell, No. 5.....	477	900	41	436	1,074	.....	250
20 Mahutaka.....	Mitchell, No. 4.....	476	833	38	381	1,139	.....	.....
21 Mahutaka.....	Mitchell, No. 3.....	476	868	29	411	1,080	.....	250
22 Mahutaka.....	Mitchell, No. 6.....	474	907	43	372	1,128	.....	.....
1 Mefford.....	Siler, No. 1.....	474	851	6	436	1,072	.....	Gas, 846 feet.
2 Mefford.....	Siler, No. 2.....	475	846	11	367	1,133	.....	.....
3 Mefford.....	Siler, No. 3.....	476	891	41	412	1,088	901	.....
4 Mefford.....	Siler, No. 4.....	476	850	12	368	1,132	.....	Gas, 850 feet.
5 Mefford.....	Siler, No. 5.....	477	902	33	430	1,090	.....	250
6 Mefford.....	Siler, No. 6.....	474	841	4	353	1,137	.....	.....
7 Ohio.....	Haskins, No. 1.....	466	904	42	436	1,074	.....	.....
8 Ohio.....	Haskins, No. 2.....	465	823	36	346	1,154	.....	.....
			904	33	427	1,073	.....	Gas, 860 feet.
			880	10	383	1,117	.....	.....
			858	28	421	1,079	.....	.....
			917	35	441	1,059	.....	.....
			861	11	395	1,116	.....	.....
			913	62	436	1,064	.....	.....
			830	10	353	1,147	.....	.....
			912	46	436	1,065	.....	.....
			920	42	446	1,054	962	.....
			876	4	401	1,099	.....	.....
			945	26	470	1,030	973	.....
			853	38	375	1,126	880	.....
			904	17	426	1,074	949	.....
			888	.....	430	1,070	.....	Dry Salt water
			1,012	6	565	945	.....	.....
			842	.....	373	1,137	.....	.....
			875	13	405	1,094	917	.....
			861	22	377	1,128	.....	.....
			888	12	414	1,086	.....	2 Gas, 880 feet, salt water, 890 feet.
			387	.....	414	1,095	885	.....
			339	17	374	1,126	842	30 Gas, 840 feet.

## Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.				
16— N. E. W.	9	Ohio.....	Haskins, No. 4.....	450	Stray.....	814	18	364	1,126	818	200	Gas, 815 feet.....
	10	Ohio.....	Haskins, No. 3.....	445	..do.....	820	12	376	1,126	824	30	Gas, 821 feet.....
	1	Treat, Crawford & Treat.	Connett, No. 3.....	457	..do.....	840	30	383	1,117	.....	100	.....
	2	Treat, Crawford & Treat.	Connett, No. 4.....	457	..do.....	836	.....	378	1,122	.....	1,029	.....
	3	Treat, Crawford & Treat.	Connett, No. 5.....	455	..do.....	847	6	392	1,118	.....	.....	.....
	4	Treat, Crawford & Treat.	Connett, No. 1.....	468	Robinson-1.....	879	.....	411	1,089	.....	.....	.....
	5	Treat, Crawford & Treat.	Connett, No. 2.....	469	Robinson-4.....	1,062	.....	594	1,006	1062	Dry	.....
	6	Featzer & Copeland.....	Good, No. 5.....	472	Robinson-2.....	899	7	430	1,070	.....	Dry	.....
	7	Featzer & Copeland.....	Good, No. 2.....	472	Robinson-3.....	900	15	428	1,072	.....	.....	.....
	8	Featzer & Copeland.....	Good, No. 4.....	468	..do.....	922	12	467	1,063	945	.....	Salt water, 946 feet.....
	9	Featzer & Copeland.....	Good, No. 1.....	472	..do.....	942	32	450	1,050	930	.....	Salt water, 950 feet.....
	10	Featzer & Copeland.....	Good, No. 3.....	467	..do.....	927	26	455	1,045	935	.....	Salt water, 954 feet.....
	11	Treat, Crawford & Treat.	J. Good, No. 9.....	469	..do.....	932	18	405	1,035	.....	.....	Salt water, 950 feet.....
	12	Treat, Crawford & Treat.	J. Good, No. 12.....	471	Robinson-2.....	905	33	436	1,064	908	50	.....
	13	Treat, Crawford & Treat.	J. Good, No. 11.....	468	Robinson-1.....	900	78	419	1,061	943	50	.....
S. E....	14	Treat, Crawford & Treat.	J. Good, No. 13.....	468	..do.....	902	56	434	1,055	932	150	.....
	15	Ohio.....	R. Good, No. 1.....	462	Robinson-4.....	917	18	449	1,051	.....	100	.....
	1	Treat, Crawford & Treat.	J. Good, No. 10.....	465	Robinson-2.....	978	.....	511	989	.....	Dry	Salt water. No sands above.....
	2	Treat, Crawford & Treat.	J. Good, No. 7.....	465	Robinson-1.....	900	42	435	1,065	910	200	.....
	3	Treat, Crawford & Treat.	J. Good, No. 4.....	469	..do.....	891	53	426	1,074	905	50	.....
	4	Bruner.....	Dewey, No. 6.....	470	Robinson-2.....	912	35	443	1,057	912	100	.....
	5	Bruner.....	Dewey, No. 7.....	473	Robinson-1.....	896	38	426	1,074	899	941	.....
	6	Bruner.....	Dewey, No. 2.....	476	..do.....	894	46	421	1,079	897	947	.....
	7	Bruner.....	Dewey, No. 3.....	464	Stray.....	831	25	346	1,164	.....	.....	.....
					Robinson-1.....	881	39	406	1,064	886	.....	.....
					..do.....	881	56	417	1,063	884	.....	.....



## Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face elevation— feet	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
15— N. W.	9 Ohio.		Mann, No. 12.	487	Robinson-3	927		440	1,000	906	50	Gas, 920 feet.
	10 Ohio.		Mann, No. 13.	483	do.	928		442	1,000	900	50	Gas, 927 feet.
	11 Ohio.		Mann, No. 23.	492	do.	940		448	1,052	900	80	Gas, 945 feet.
	12 Ohio.		Mann, No. 24.	484	do.	940		448	1,054	940	100	Gas, 946 feet.
	13 Ohio.		Mann, No. 11.	483	do.	928		444	1,055	940	60	Gas, 930 feet.
	14 Ohio.		Mann, No. 14.	483	do.	910		454	1,072	930	80	Gas, 913 feet.
	15 Ohio.		Mann, No. 23.	497	do.	899		431	1,089	910	120	Gas, 903 feet.
	16 Ohio.		Ricker, No. 8.	493	do.	899		431	1,089	910		Gas, 870 feet.
	17 Ohio.		Ricker, No. 7.	480	do.	859		444	1,050			
	18 Ohio.		Ricker, No. 2.	480	do.	831		451	1,049	900		
	19 Ohio.		Ricker, No. 5.	480	do.	918		436	1,044	904		
	20 Ohio.		Ricker, No. 9.	482	do.	913		432	1,088	900		
	21 Ohio.		Ricker, No. 2.	482	do.	875		436	1,115			
	22 Ohio.		Ricker, No. 4.	482	do.	911		438	1,071	900		Gas, 917 feet.
	23 Ohio.		Ricker, No. 6.	481	do.	857		440	1,124			
	24 Ohio.		Ricker, No. 1.	480	do.	912		431	1,089	919		Gas, 919 feet.
	25 Red Bank.		Ricker, No. 2 "R B".	480	do.	916		430	1,064	903		
	26 Ohio.		Ricker, No. 3 "R B".	481	do.	899		430	1,051		20	
	27 Wash.		Ricker, No. 2.	486	do.	922		442	1,089			
	28 Red Bank.		Ricker, No. 2 "B".	486	do.	903		431	1,076		30	
	29 Red Bank.		Ricker, No. 3 "B".	486	do.	921		431	1,083			
	30 Wash.		Ricker, No. 3 "B".	486	do.	923		431	1,083			
	31 Red Bank.		Ricker, No. 4 "R B".	486	do.	927		431	1,083			
					do.	872		431	1,083	919	80	



Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
31— S. E.	9	Ohio.....	Wirt, No. 4.....	462 {	Robinson-1.....	869	7	407	1,093	.....	.....	.....
					Robinson-2.....	890	20	428	1,072	.....	.....	.....
					Robinson-3.....	923	18	461	1,039	.....	25	.....
32— S. W.	1	Kanawha.....	Wood, No. 15.....	489 {	Robinson-1.....	865	15	376	1,124	.....	.....	.....
					Robinson-2.....	912	.....	423	1,077	.....	.....	.....
					Robinson-3.....	883	9	397	1,103	935	.....	.....
	2	Kanawha.....	Wood, No. 31.....	486 {	Robinson-1.....	918	27	432	1,068	.....	.....	.....
					Robinson-2.....	852	25	365	1,135	952	.....	Gas, 852 feet.
					Robinson-3.....	893	7	408	1,064	.....	.....	.....
	3	Kanawha.....	Wood, No. 32.....	487 {	Robinson-1.....	918	18	431	1,069	.....	.....	.....
					Robinson-2.....	858	20	370	1,130	943	.....	.....
					Robinson-3.....	905	.....	417	1,063	.....	.....	.....
	4	Kanawha.....	Wood, No. 14.....	488 {	Robinson-1.....	858	10	374	1,126	932	.....	.....
					Robinson-2.....	904	.....	420	1,080	.....	.....	.....
					do.....	882	.....	408	1,092	929	.....	.....
S. E.	5	Kanawha.....	Wood, No. 13.....	484 {	Robinson-1.....	863	9	386	1,114	894	.....	.....
					Robinson-2.....	874	.....	397	1,103	.....	.....	.....
					Robinson-3.....	865	15	385	1,115	911	.....	.....
	6	Kanawha.....	Wood, No. 9.....	477 {	do.....	846	.....	362	1,138	933	.....	.....
					Robinson-1.....	903	.....	419	1,081	.....	.....	.....
					Robinson-2.....	855	42	370	1,130	919	.....	.....
	7	Kanawha.....	Wood, No. 6.....	485 {	Robinson-1.....	919	.....	424	1,066	944	.....	.....
					Robinson-2.....	872	17	385	1,115	.....	.....	.....
					Robinson-3.....	901	.....	414	1,066	938	.....	Well abandoned.
	8	Kanawha.....	Wood, No. 10.....	487 {	Robinson-1.....	825	.....	342	1,158	.....	.....	Shale gas, 650 feet.
					Robinson-2.....	873	.....	390	1,110	920	.....	.....
					do.....	863	57	375	1,125	952	.....	Shale gas, 670 feet.
	9	American Oil and Development Co.....	Short, No. 21.....	483 {	Robinson-1.....	813	7	326	1,174	.....	.....	.....
					Robinson-2.....	835	5	348	1,152	.....	.....	.....
					do.....	903	17	410	1,084	942	.....	Salt water.

and Devel	Short, No. 19.	486	Robinson-1	849	14	366	1,144	948	230	Salt water.
			Robinson-2	866	8	412	1,088			
and Devel			Robinson-3	923	8	437	1,063	935		
	Short, No. 2.	478	Robinson-1	839	19	351	1,149	833		
			Robinson-2	888	18	390	1,110			
			Robinson-4	943	4	477	1,093			Salt water.
and Devel	Short, No. 18.	467	Robinson-1	889		243	1,157			
			Robinson-3	985	5	438	1,062	990	Dry	
and Devel	Short, No. 17.	469	Robinson-1	848	33	366	1,131	895	200	
and Devel			do.							
	Short, No. 23.	484	Robinson-2	819	10	335	1,165			
			Robinson-1	904	8	420	1,080		100	
and Devel			Robinson-2	815	12	347	1,153			
	Short, No. 3.	468	Robinson-2	857	15	366	1,111			
			Robinson-3	908		438	1,062	934		
and Devel	Short, No. 24.	466							No record.	
and Devel	Short, No. 5.	468	Robinson-1	810	10	342	1,166			
			Robinson-2	830	5	363	1,138		Dry	
	Railway right of way.	469								No record.
	do.	469								do.
	do.	478								do.
and Devel										
and Devel	Wall, No. 1.	468	Robinson-1	860	21	377	1,123	902		Shale gas, 665 and 750 feet
and Devel	Wall, No. 16.	468	do.	862	15	374	1,126	863	50	
and Devel	Wall, No. 12.	468	do.	870	23	382	1,118	872		Shale gas, 670 feet.
and Devel			do.							
	Wall, No. 11.	481	Robinson-3	845	2	364	1,136			Shale gas, 605 feet.
			Robinson-3	906	23	426	1,075	912	50	
and Devel			Robinson-1	833	24	351	1,149			Shale gas, 600 feet.
	Wall, No. 10.	482	Robinson-3	912	20	430	1,070			
and Devel			Robinson-1	870	25	385	1,115			Salt water, 885 feet.
	Wall, No. 13.	485	Robinson-3	912	22	427	1,073	917	75	Shale gas, 630 feet.
and Devel			do.							Shale gas, 670 feet.
	Wall, No. 2.	478		904	19	426	1,074	907	928	
and Devel			Robinson-1	878	5	399	1,111			Shale gas, 625 feet.
	Wall, No. 9.	489	Robinson-2	904	20	415	1,065	906	75	
and Devel			Robinson-1	863	23	378	1,122			
	Wall, No. 3.	485	Robinson-3	925	17	440	1,060	926	50	
and Devel			do.							
	Wall, No. 8.	488		875	41	387	1,113	878	400	



## Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
15— S. E...	5	Ohio.....	Wakefield, No. 6.....	488	Robinson-2.....	928	.....	440	1,060	938	50	Gas, 933 feet.....
	6	Ohio.....	Wakefield, No. 8.....	490	Stray.....	817	.....	327	1,173	.....	40	Gas, 920 feet.....
	7	Ohio.....	Wakefield, No. 12.....	480	Robinson-2.....	920	.....	430	1,070	.....	150	Gas, 904 feet.....
	8	Ohio.....	Wakefield, No. 7.....	486	Robinson-1.....	888	2	388	1,112	.....	Dry	.....
	9	Ohio.....	Wakefield, No. 13.....	489	Robinson-2.....	900	38	420	1,080	916	942	.....
	10	Ohio.....	Wakefield, No. 10.....	465	Robinson-1.....	884	.....	398	1,102	.....	60	Gas, 924 feet.....
	11	Ohio.....	Wakefield, No. 9.....	460	Robinson-2.....	919	29	430	1,070	926	100	Gas, 912 feet.....
	12	Ohio.....	Wakefield, No. 1.....	480	Robinson-3.....	907	24	442	1,058	916	40	Gas, 913 feet.....
	13	Ohio.....	Wakefield, No. 3.....	487	do.....	906	28	440	1,060	913	20	.....
	14	Ohio.....	Reed, No. 5.....	496	Robinson-1.....	897	.....	407	1,083	907	30	.....
	15	Ohio.....	Reed, No. 6.....	493	do.....	903	.....	416	1,084	908	.....	.....
	16	Ohio.....	Reed, No. 1.....	490	Robinson-3.....	894	.....	398	1,102	896	2	.....
	17	Ohio.....	Reed, No. 2.....	490	Robinson-1.....	964	.....	468	1,032	964	20	Gas, 944 feet.....
	18	Ohio.....	Reed, No. 3.....	490	Robinson-3.....	941	.....	448	1,052	946	400	.....
	19	Red Bank.....	Martin, No. 8.....	488	Robinson-1.....	887	.....	397	1,103	893	20	.....
	20	Red Bank.....	Martin, No. 2.....	485	do.....	900	.....	410	1,090	905	2	.....
	21	Red Bank.....	Martin, No. 9.....	487	do.....	907	.....	417	1,083	918	.....	.....
	22	Red Bank.....	Martin, No. 4.....	486	Stray.....	856	14	368	1,132	.....	Dry	.....
	1	Mahutska.....	Bond, No. 13.....	481	Robinson-1.....	906	10	418	1,082	905	25	.....
16— N. E...	1	Mahutska.....	Bond, No. 13.....	481	do.....	890	48	405	1,095	.....	.....	.....
	1	Mahutska.....	Bond, No. 13.....	481	Stray.....	876	15	389	1,111	.....	.....	.....
	1	Mahutska.....	Bond, No. 13.....	481	Robinson-1.....	910	5	423	1,077	.....	.....	.....
	1	Mahutska.....	Bond, No. 13.....	481	Robinson-2.....	935	.....	448	1,052	.....	.....	.....
	1	Mahutska.....	Bond, No. 13.....	481	Robinson-3.....	960	6	493	1,007	.....	.....	.....
	1	Mahutska.....	Bond, No. 13.....	481	Robinson-4.....	1,013	10	526	974	.....	.....	.....
	1	Mahutska.....	Bond, No. 13.....	481	Robinson-3.....	1,092	30	605	895	.....	Dry	.....
	1	Mahutska.....	Bond, No. 13.....	481	Robinson-3.....	940	25	454	1,046	.....	100	.....
	1	Mahutska.....	Bond, No. 13.....	481	Robinson-1.....	885	.....	404	1,086	.....	.....	.....
	1	Mahutska.....	Bond, No. 13.....	481	Robinson-2.....	905	13	424	1,076	.....	.....	.....
	1	Mahutska.....	Bond, No. 13.....	481	Robinson-3.....	940	17	459	1,041	.....	150	.....

S. E.	13	Liberty Oil & Gas Co.	Houghton, No. 11	481	804	4	328	1,177	370	832	200 Gas, 800 feet.	Salt water, 912 feet.
S. E.	14	Liberty Oil & Gas Co.	Houghton, No. 10	481	848	67	347	1,153	870	832	200 Gas, 800 feet.	Salt water, 912 feet.
	15	Liberty Oil & Gas Co.	Houghton, No. 9	481	848	25	350	1,141	840	832	200 Gas, 800 feet.	Salt water, 912 feet.
	16	Liberty Oil & Gas Co.	Houghton, No. 8	481	848	13	400	1,091	840	832	200 Gas, 800 feet.	Salt water, 912 feet.
	17	Liberty Oil & Gas Co.	Houghton, No. 7	481	848	48	345	1,134	815	832	200 Gas, 800 feet.	Salt water, 912 feet.
	18	Liberty Oil & Gas Co.	Houghton, No. 6	481	848	19	411	1,080	815	832	200 Gas, 800 feet.	Salt water, 912 feet.
	19	Liberty Oil & Gas Co.	Houghton, No. 5	481	848	14	430	1,061	815	832	200 Gas, 800 feet.	Salt water, 912 feet.
	20	Liberty Oil & Gas Co.	Houghton, No. 4	481	848	12	430	1,180	832	832	200 Gas, 800 feet.	Salt water, 912 feet.
	21	Liberty Oil & Gas Co.	Houghton, No. 3	481	848	20	343	1,157	828	832	200 Gas, 800 feet.	Salt water, 912 feet.
	22	Liberty Oil & Gas Co.	Houghton, No. 2	481	848	19	408	1,087	828	832	200 Gas, 800 feet.	Salt water, 912 feet.
	23	Liberty Oil & Gas Co.	Houghton, No. 1	481	848	15	444	1,054	835	832	200 Gas, 800 feet.	Salt water, 912 feet.
S. E.	24	Liberty Oil & Gas Co.	Houghton, No. 10	482	848	26	352	1,148	835	832	200 Gas, 800 feet.	Salt water, 912 feet.
	25	Liberty Oil & Gas Co.	Houghton, No. 9	482	848	17	397	1,103	831	832	200 Gas, 800 feet.	Salt water, 912 feet.
	26	Liberty Oil & Gas Co.	Houghton, No. 8	482	848	26	351	1,140	831	832	200 Gas, 800 feet.	Salt water, 912 feet.
	27	Liberty Oil & Gas Co.	Houghton, No. 7	482	848	16	397	1,103	831	832	200 Gas, 800 feet.	Salt water, 912 feet.
	28	Liberty Oil & Gas Co.	Houghton, No. 6	482	848	11	317	1,183	831	832	200 Gas, 800 feet.	Salt water, 912 feet.
	29	Liberty Oil & Gas Co.	Houghton, No. 5	482	848	6	393	1,117	831	832	200 Gas, 800 feet.	Salt water, 912 feet.
	30	Liberty Oil & Gas Co.	Houghton, No. 4	482	848	5	402	1,088	831	832	200 Gas, 800 feet.	Salt water, 912 feet.
	31	Liberty Oil & Gas Co.	Houghton, No. 3	482	848	20	373	1,127	875	832	200 Gas, 800 feet.	Salt water, 912 feet.
	32	Liberty Oil & Gas Co.	Houghton, No. 2	482	848	60	383	1,117	875	832	200 Gas, 800 feet.	Salt water, 912 feet.
	33	Liberty Oil & Gas Co.	Houghton, No. 1	482	848	8	420	1,080	912	832	200 Gas, 800 feet.	Salt water, 912 feet.
S. E.	34	Liberty Oil & Gas Co.	Houghton, No. 10	483	848	8	390	1,110	920	832	200 Gas, 800 feet.	Salt water, 912 feet.
	35	Liberty Oil & Gas Co.	Houghton, No. 9	483	848	7	385	1,115	874	832	200 Gas, 800 feet.	Salt water, 912 feet.
	36	Liberty Oil & Gas Co.	Houghton, No. 8	483	848	7	418	1,082	835	832	200 Gas, 800 feet.	Salt water, 912 feet.
	37	Liberty Oil & Gas Co.	Houghton, No. 7	483	848	14	354	1,144	835	832	200 Gas, 800 feet.	Salt water, 912 feet.
	38	Liberty Oil & Gas Co.	Houghton, No. 6	483	848	11	390	1,110	880	832	200 Gas, 800 feet.	Salt water, 912 feet.
	39	Liberty Oil & Gas Co.	Houghton, No. 5	483	848	11	391	1,130	880	832	200 Gas, 800 feet.	Salt water, 912 feet.
	40	Liberty Oil & Gas Co.	Houghton, No. 4	483	848	45	368	1,132	880	832	200 Gas, 800 feet.	Salt water, 912 feet.
	41	Liberty Oil & Gas Co.	Houghton, No. 3	483	848	60	378	1,124	886	832	200 Gas, 800 feet.	Salt water, 912 feet.
	42	Liberty Oil & Gas Co.	Houghton, No. 2	483	848	20	370	1,120	886	832	200 Gas, 800 feet.	Salt water, 912 feet.
	43	Liberty Oil & Gas Co.	Houghton, No. 1	483	848	48	371	1,120	886	832	200 Gas, 800 feet.	Salt water, 912 feet.
S. E.	44	Liberty Oil & Gas Co.	Houghton, No. 10	484	848	145	501	830	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	45	Liberty Oil & Gas Co.	Houghton, No. 9	484	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	46	Liberty Oil & Gas Co.	Houghton, No. 8	484	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	47	Liberty Oil & Gas Co.	Houghton, No. 7	484	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	48	Liberty Oil & Gas Co.	Houghton, No. 6	484	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	49	Liberty Oil & Gas Co.	Houghton, No. 5	484	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	50	Liberty Oil & Gas Co.	Houghton, No. 4	484	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	51	Liberty Oil & Gas Co.	Houghton, No. 3	484	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	52	Liberty Oil & Gas Co.	Houghton, No. 2	484	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	53	Liberty Oil & Gas Co.	Houghton, No. 1	484	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
S. E.	54	Liberty Oil & Gas Co.	Houghton, No. 10	485	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	55	Liberty Oil & Gas Co.	Houghton, No. 9	485	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	56	Liberty Oil & Gas Co.	Houghton, No. 8	485	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	57	Liberty Oil & Gas Co.	Houghton, No. 7	485	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	58	Liberty Oil & Gas Co.	Houghton, No. 6	485	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	59	Liberty Oil & Gas Co.	Houghton, No. 5	485	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	60	Liberty Oil & Gas Co.	Houghton, No. 4	485	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	61	Liberty Oil & Gas Co.	Houghton, No. 3	485	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	62	Liberty Oil & Gas Co.	Houghton, No. 2	485	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.
	63	Liberty Oil & Gas Co.	Houghton, No. 1	485	848	100	771	720	830	832	200 Gas, 800 feet.	Salt water, 912 feet.

## Crawford County—Oblong Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Band.				Oil depth—feet.	
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.	
35--S. W.	1	Ohio.....	Firebaugh, No. 4.....	512	Robinson-1.....	927	18	415	1,085	900
	2	Ohio.....	Firebaugh, No. 3.....	509	do.....	931	10	422	1,078	903
	3	Ohio.....	Firebaugh, No. 2.....	509	Robinson-2.....	946	13	437	1,063	900
	4	Ohio.....	Firebaugh, No. 8.....	502	Robinson-1.....	923	10	431	1,079	900
	5	Ohio.....	Firebaugh, No. 7.....	503	do.....	925	15	417	1,063	925
S. E.	6	Ohio.....	Firebaugh, No. 13.....	502	Robinson-3.....	930	15	438	1,049	970
	1	Ohio.....	Warnock, No. 3.....	501						No record.
	2	Ohio.....	Warnock, No. 4.....	499						do.
	3	Ohio.....	Warnock, No. 1.....	516	Robinson-2.....	930	13	434	1,066	900
	4	Ohio.....	Warnock, No. 7.....	514	do.....	941	15	427	1,073	945
	5	Ohio.....	Warnock, No. 8.....	490						do.
	6	Ohio.....	Warnock, No. 2.....	504						No record.
	7	Ohio.....	McLain, No. 1.....	488						do.
	8	Ohio.....	McLain, No. 2.....	490						do.
	9	Ohio.....	McLain, No. 4.....	507						do.
	10	Ohio.....	McLain, No. 3.....	511						do.
	11	Bailey & Frits.....	Beeman, No. 2.....	498	Stray.....	870		352	1,118	
	12	Bales.....	Griever, No. 1.....	504	Robinson-1.....	908	14	425	1,080	933
	13	Bales.....	McLain, No. 3.....	513	Stray.....	923	23	416	1,061	935
	14	Bales.....	McLain, No. 1.....	513	Robinson-1.....	938	27	377	1,138	
				513	Stray.....	965	66	432	1,077	100
					Robinson-2.....			442	1,068	135,000,000, cubic feet gas daily.
15	Bales.....		McLain, No. 2.....	507	Stray.....	885		378	1,122	
					Robinson-1.....	932	38	425	1,075	
16	Gillespie.....		Barnes, No. 3.....	504	Stray.....	873	49	369	1,131	100
					Robinson-1.....	890	29	428	1,074	Gas, 877 feet.
17	Gillespie.....		Barnes, No. 3.....	500	Stray.....	878	50	366	1,131	Gas, 898 feet.
					Robinson-1.....	938	13	428	1,071	



8	Bruner.....	Dewey, No. 1.....	465	Stray.....	836	.....	371	1, 120	.....	.....	.....	.....
9	Bruner.....	Dewey, No. 4.....	470	Stray.....	841	.....	425	1, 075	.....	.....	.....	.....
10	Bruner.....	Dewey, No. 5.....	472	Robinson-1.....	848	.....	371	1, 129	.....	.....	.....	.....
11	Treat, Crawford & Treat.....	J. Good, No. 8.....	468	Robinson-1.....	898	.....	428	1, 072	.....	946	.....	.....
12	Treat, Crawford & Treat.....	J. Good, No. 2.....	469	Robinson-2.....	896	.....	424	1, 076	.....	901	.....	.....
13	Treat, Crawford & Treat.....	J. Good, No. 5.....	471	Robinson-3.....	904	.....	436	1, 064	.....	901	.....	.....
14	Red Bank.....	Carlisle, No. 4.....	472	Robinson-2.....	864	.....	395	1, 105	.....	910	.....	Gas, 884 feet
15	Red Bank.....	Carlisle, No. 5.....	472	Stray.....	942	.....	473	1, 027	.....	.....	.....	.....
16	Red Bank.....	Carlisle, No. 2.....	471	Robinson-1.....	930	.....	459	1, 011	.....	.....	.....	.....
17	Red Bank.....	Carlisle, No. 6.....	475	Robinson-2.....	903	.....	431	1, 069	.....	.....	.....	.....
18	Red Bank.....	Carlisle, No. 1.....	478	Robinson-3.....	822	.....	350	1, 150	.....	.....	.....	.....
19	Red Bank.....	Carlisle, No. 7.....	470	Robinson-2.....	862	.....	390	1, 110	.....	.....	.....	.....
20	Red Bank.....	Carlisle, No. 8.....	474	Robinson-2.....	900	.....	428	1, 072	.....	.....	.....	.....
21	Red Bank.....	Carlisle, No. 3.....	474	Robinson-2.....	907	.....	436	1, 064	.....	.....	.....	.....
22	Red Bank.....	Carlisle, No. 9.....	472	Robinson-3.....	905	.....	430	1, 070	.....	.....	.....	Gas, 910 feet
23	Treat, Crawford & Treat.....	J. Good, No. 6.....	472	Stray.....	935	.....	460	1, 040	.....	.....	.....	.....
24	Treat, Crawford & Treat.....	J. Good, No. 1.....	472	Robinson-2.....	835	.....	357	1, 143	.....	.....	.....	Gas, 835 feet
25	Treat, Crawford & Treat.....	J. Good, No. 3.....	472	Robinson-2.....	910	.....	432	1, 068	.....	.....	.....	.....
1	Ohio.....	Randolph, No. 2.....	447	Robinson-2.....	882	.....	412	1, 068	.....	.....	.....	.....
2	Ohio.....	Randolph, No. 1.....	447	Robinson-2.....	895	.....	425	1, 075	.....	.....	.....	.....
3	Pure.....	Shiltz, No. 3.....	450	Robinson-2.....	902	.....	432	1, 068	.....	.....	.....	.....
4	Pure.....	Shiltz, No. 2.....	450	Robinson-2.....	888	.....	414	1, 066	.....	.....	.....	.....
5	Pure.....	Shiltz, No. 4.....	452	Robinson-2.....	907	.....	433	1, 067	.....	.....	.....	.....
6	Pure.....	Shiltz, No. 6.....	450	Shallow.....	690	.....	218	1, 282	.....	.....	.....	Gas, 640 feet
7	Pure.....	Shiltz, No. 1.....	452	Robinson-2.....	907	.....	435	1, 065	.....	.....	.....	.....
8	Ohio.....	Dedrick, No. 4.....	450	Robinson-2.....	909	.....	437	1, 063	.....	.....	.....	.....
9	Ohio.....	Dedrick, No. 1.....	460	Robinson-3.....	910	.....	438	1, 062	.....	.....	.....	.....
10	Ohio.....	Dedrick, No. 2.....	448	Robinson-2.....	912	.....	440	1, 060	.....	.....	.....	.....
11	Ohio.....	Dedrick, No. 3.....	447	Robinson-2.....	859	.....	412	1, 068	.....	.....	.....	Gas, 860 feet
12	Ohio.....	H. Mitchell, No. 2.....	461	Robinson-3.....	863	.....	416	1, 064	.....	.....	.....	.....
13	Ohio.....	H. Mitchell, No. 3.....	463	Robinson-1.....	879	.....	432	1, 068	.....	.....	.....	.....
14	Ohio.....	H. Mitchell, No. 4.....	464	Robinson-1.....	868	.....	418	1, 062	.....	.....	.....	.....
15	Ohio.....	H. Mitchell, No. 1.....	446	Robinson-1.....	871	.....	419	1, 081	.....	.....	.....	.....
1	Ohio.....	Perkins, No. 1.....	450	Robinson-2.....	882	.....	432	1, 068	.....	.....	.....	.....
2	Red Bank.....	Perkins, No. 1.....	455	Robinson-2.....	877	.....	425	1, 075	.....	.....	.....	.....
3	Ohio.....	Perkins, No. 2.....	450	Robinson-2.....	882	.....	432	1, 068	.....	.....	.....	.....
4	Red Bank.....	Dedrick, No. 8.....	460	Robinson-3.....	905	.....	455	1, 045	.....	.....	.....	.....
				Robinson-2.....	906	.....	446	1, 054	.....	.....	.....	.....
				Robinson-3.....	926	.....	466	1, 034	.....	.....	.....	.....
				Robinson-2.....	899	.....	451	1, 049	.....	.....	.....	.....
				Robinson-2.....	888	.....	441	1, 059	.....	.....	.....	.....
				Robinson-3.....	912	.....	451	1, 049	.....	.....	.....	Gas, 913 feet. Well abandoned
				Robinson-1.....	843	.....	380	1, 120	.....	.....	.....	.....
				Robinson-1.....	876	.....	412	1, 068	.....	.....	.....	Gas, 846 feet
				Robinson-1.....	870	.....	424	1, 076	.....	.....	.....	Gas, 876 feet
				Robinson-2.....	893	.....	443	1, 057	.....	.....	.....	Salt water, 876 feet
				Robinson-2.....	901	.....	446	1, 054	.....	.....	.....	.....
				Robinson-2.....	905	.....	455	1, 045	.....	.....	.....	.....
				Robinson-3.....	932	.....	472	1, 028	.....	.....	.....	.....

17- N. E...

N. W...

## Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level feet.	Altitude above datum plane—feet.			
16— N. W.	5	Red Bank.....	Dedrick, No. 7.....	467	Robinson-2.....	927	25	460	1,040	.....	50	.....
	6	Red Bank.....	Dedrick, No. 9.....	468	Robinson-3.....	942	19	474	1,026	949	75	.....
	7	Ohio.....	Dedrick, No. 8.....	468	do.....	951	15	483	1,017	951	35	Gas, 952 feet.
	8	Ohio.....	Dedrick, No. 9.....	462	do.....	946	14	494	1,016	946	90	Gas, 947 feet.
	9	Ohio.....	Dedrick, No. 7.....	465	Robinson-2.....	930	13	465	1,035	.....	50	.....
	10	Red Bank.....	Dedrick, No. 10.....	460	Robinson-1.....	902	40	442	1,058	937	50	.....
	11	Ohio.....	Dedrick, No. 6.....	463	Robinson-2.....	932	15	469	1,031	935	.....	.....
	12	Ohio.....	Dedrick, No. 5.....	463	Robinson-3.....	960	7	497	1,003	.....	.....	.....
	1	Ohio.....	Baldwin, No. 2.....	461	Robinson-2.....	926	7	463	1,037	927	.....	.....
	2	Ohio.....	Baldwin, No. 1.....	456	Robinson-3.....	938	11	475	1,025	.....	30	.....
	3	Crescent.....	Baldwin, No. 7.....	461	do.....	952	6	491	1,009	938	.....	.....
	4	Crescent.....	Baldwin, No. 5.....	460	Robinson-2.....	937	12	481	1,019	.....	.....	.....
S. W.	5	Crescent.....	Baldwin, No. 1.....	445	Robinson-3.....	961	3	505	995	.....	.....	.....
	6	Crescent.....	Baldwin, No. 3.....	445	Robinson-2.....	983	9	472	1,028	.....	.....	.....
	7	Crescent.....	Baldwin, No. 4.....	445	Robinson-3.....	957	14	496	1,004	.....	986	.....
	8	Crescent.....	Baldwin, No. 6.....	445	Robinson-2.....	927	10	467	1,033	.....	.....	.....
	1	Crescent.....	Baldwin, No. 1.....	445	Robinson-3.....	955	11	495	1,005	977	.....	.....
	2	Ohio.....	Baldwin, No. 1.....	445	Robinson-2.....	900	14	455	1,045	.....	.....	.....
	3	Ohio.....	Baldwin, No. 3.....	445	Robinson-3.....	930	14	485	1,015	.....	.....	Light Salt water, 944 feet.
	4	Ohio.....	Baldwin, No. 4.....	445	Robinson-1.....	890	18	445	1,055	.....	.....	.....
	5	Ohio.....	Baldwin, No. 5.....	445	Robinson-3.....	912	23	467	1,033	943	.....	.....
	6	Ohio.....	Baldwin, No. 6.....	445	Robinson-2.....	907	30	462	1,038	998	.....	.....
	7	Ohio.....	Baldwin, No. 7.....	445	Robinson-3.....	914	.....	.....	.....	920	.....	.....
	8	Ohio.....	Baldwin, No. 8.....	445	Robinson-2.....	939	13	.....	.....	976	.....	.....
S. E.	1	Ohio.....	W. Mitchell, No. 1.....	447	Robinson-3.....	868	2	421	1,079	925	.....	Dry
	2	Ohio.....	W. Mitchell, No. 2.....	447	do.....	868	10	421	1,079	.....	.....	.....
	3	Ohio.....	J. Mitchell, No. 4.....	447	Robinson-2.....	882	12	436	1,055	.....	35	Gas, 885 feet. Salt water, 897 feet.
	4	Ohio.....	J. Mitchell, No. 3.....	447	do.....	882	15	436	1,055	886	25	Gas, 885 feet. Salt water, 897 feet.
	5	Ohio.....	J. Mitchell, No. 5.....	447	Robinson-1.....	862	30	415	1,085	1,107	.....	Dry Salt water
	6	Ohio.....	J. Mitchell, No. 6.....	450	Robinson-2.....	846	53	396	1,104	899	.....	.....

7	Campbell Bros	Murphy, No. 3	463	Robinson	851	51	388	1,112	906	No record
8	Campbell Bros	Murphy, No. 6	463	Robinson-1 (7)	890	35	395	1,105	920	No record
9	Campbell Bros	Murphy, No. 2	465	do						No record
10	Campbell Bros	Murphy, No. 4	468	Robinson-1 (7)	836	57	371	1,129	893	No record
11	Campbell Bros	Murphy, No. 7	465	do	835	55	368	1,132	894	No record
12	Campbell Bros	Murphy, No. 8	467	Robinson-1	879		431	1,069	890	2 Salt water, 890 feet. Well abandoned.
13	Campbell Bros	Murphy, No. 1	463	do						75 Gas, 885 feet. Salt water, 900 feet.
14	Ohio	McColpin, No. 4	448	do	880		433	1,067		100 Gas, 900 feet. Well abandoned.
15	Ohio	McColpin, No. 3	447	do			442	1,058	892	Light Salt water, 927 feet.
16	Ohio	McColpin, No. 1	448	do	890		449	1,051	900	Dry
17	Ohio	McColpin, No. 2	448	Robinson-3	927		479	1,021		Dry
18	Ohio	McColpin, No. 5	448	Robinson-4	1,040		592	908	1,040	Dry
1	Red Bank	Dedrick, No. 5	476	Robinson-2	945	14	469	1,031	955	20
2	Red Bank	Dedrick, No. 4	478	Robinson-3	948	18	480	1,020	964	20
3	Red Bank	Dedrick, No. 1	478	Robinson-2	947	14	469	1,031	949	40
4	Red Bank	Dedrick, No. 2	472	Robinson-3	947	16	475	1,025		10
5	Red Bank	Dedrick, No. 6	476	Robinson-2	942	12	466	1,034		50
6	Red Bank	Dedrick, No. 3	475	do	941	38	466	1,034		100
7	Morrison	Perkins, No. 1	478	Stray	840		362	1,138		
8	Morrison	Perkins, No. 2	476	Robinson-3	970	20	492	1,008	975	15
9	Morrison	Perkins, No. 3	476	do	970	27	494	1,006	977	70
10	Morrison	Perkins, No. 6	475	do	958	34	482	1,018	961	100
11	Morrison	Perkins, No. 4	474	do	983	21	508	992		18
12	Morrison	Perkins, No. 5	475	do	983	22	489	1,011	965	70
13	Ohio	Dedrick, No. 4	476	do	971	29	496	1,004		20
14	Ohio	Dedrick, No. 3	474	do	988	8	512	988	998	35
15	Ohio	Dedrick, No. 5	472	Robinson-2	960	35	476	1,024	985	130
16	Ohio	Dedrick, No. 6	472	Robinson-3	985		513	987	1,007	55 Gas, 986 feet.
1	Ohio	Caywood, No. 1	474	do	990	18	518	982	1,014	7 Gas, 991 feet.
2	Ohio	Cooley, No. 1	474		1,230		756	744		Dry No record.
1	Ohio	Reade, No. 1	472		1,315		843	657		Dry Salt water, 1,230 feet. No upper sands.
1	Anchor & Selbert	School House Lot	472	Robinson-3	996	9	524	976	1,010	Dry No upper sands.
2	Ohio	Cooley, No. 2	469	Robinson-4	1,037		568	932		Dry No record.
3	Morrison	Dedrick, No. 1	470							No record
1	Ohio	Wirt, No. 1	465	Robinson-3	930	10	465	1,035	930	
2	Ohio	Wirt, No. 2	464	Robinson-1	865	12	401	1,099	865	60
3	Unknown	Wirt, No. 1	466	Robinson-1						
4	Red Bank	Wirt, No. 3	468	Robinson-4	866	9	400	1,100		
5	Red Bank	Wirt, No. 4	463	Robinson-3	970	13	504	996		75
6	Red Bank	Wirt, No. 1	457	Robinson-3	929	46	442	1,068		Dry No sands, all shale.
7	Red Bank	Wirt, No. 2	463	Robinson-1	869	28	466	1,094	871	Dry
18	Ohio	Wirt, No. 3	463	Stray	849	14	387	1,113	849	200

8- N. E...

N. W..

S. W..

• S. E...

31- S. E...



4	American Oil and Devel- opment Co.....	Short, No. 19.....	486 { Robinson-1..... Robinson-2..... Robinson-3.....	842 898 923	14 5 8	356 412 437	1,144 1,088 1,083	845 ..... 835	230 ..... .....	Salt water.....
5	American Oil and Devel- opment Co.....	Short, No. 2.....	478 { Robinson-1..... Robinson-2..... Robinson-4.....	829 868 955	19 18 4	351 390 477	1,149 1,110 1,023	833 ..... .....	..... ..... Salt water.....	
6	American Oil and Devel- opment Co.....	Short, No. 18.....	487 { Robinson-1..... Robinson-3.....	830 925	..... 5	343 438	1,157 1,062	..... 980	..... Dry	
7	American Oil and Devel- opment Co.....	Short, No. 17.....	489 Robinson-1.....	858	32	369	1,131	860	200	.....
8	American Oil and Devel- opment Co.....	Short, No. 23.....	484 { ..do..... Robinson-2..... Robinson-1.....	819 904 815	10 8 12	335 420 347	1,165 1,080 1,153	..... ..... .....	..... 100 .....	.....
9	American Oil and Devel- opment Co.....	Short, No. 3.....	468 { Robinson-2..... Robinson-2..... Robinson-3.....	857 906	15 .....	389 438	1,111 1,062	..... 934	..... .....	.....
10	American Oil and Devel- opment Co.....	Short, No. 24.....	489 .....	.....	.....	.....	.....	.....	.....	No record.....
11	American Oil and Devel- opment Co.....	Short, No. 5.....	468 { Robinson-1..... Robinson-2.....	810 830	10 5	342 362	1,158 1,138	..... .....	..... Dry	.....
12	.....	Railway right of way.....	489 .....	.....	.....	.....	.....	.....	.....	No record.....
13	.....	..do.....	490 .....	.....	.....	.....	.....	.....	.....	..do.....
14	.....	..do.....	478 .....	.....	.....	.....	.....	.....	.....	..do.....
15	American Oil and Devel- opment Co.....	Wall, No. 1.....	483 Robinson-1.....	860	21	377	1,123	862	.....	Shale gas, 585 and 750 feet
16	American Oil and Devel- opment Co.....	Wall, No. 16.....	488 ..do.....	862	15	374	1,126	863	50	.....
17	American Oil and Devel- opment Co.....	Wall, No. 12.....	488 ..do.....	870	23	382	1,118	872	.....	Shale gas, 670 feet.....
18	American Oil and Devel- opment Co.....	Wall, No. 11.....	481 { ..do..... Robinson-3.....	845 906	2 23	364 425	1,136 1,075	..... 912	..... 50	Shale gas, 605 feet.....
19	American Oil and Devel- opment Co.....	Wall, No. 10.....	482 { Robinson-1..... Robinson-3.....	833 912	24 20	351 430	1,149 1,070	..... .....	..... .....	Shale, gas, 690 feet.....
20	American Oil and Devel- opment Co.....	Wall, No. 13.....	485 { Robinson-1..... Robinson-3.....	870 912	25 22	385 477	1,115 1,073	..... 917	..... 75	Salt water, 885 feet..... Shale gas, 650 feet.....
21	American Oil and Devel- opment Co.....	Wall, No. 2.....	478 ..do.....	904	19	426	1,074	907	928	Shale gas, 670 feet.....
22	American Oil and Devel- opment Co.....	Wall, No. 9.....	489 { Robinson-1..... Robinson-2.....	878 904	5 20	399 415	1,111 1,085	..... 909	..... 929	Shale gas, 625 feet.....
23	American Oil and Devel- opment Co.....	Wall, No. 3.....	485 { Robinson-1..... Robinson-3.....	863 925	32 17	378 440	1,122 1,080	..... 926	..... 50	.....
24	American Oil and Devel- opment Co.....	Wall, No. 8.....	488 ..do.....	875	41	387	1,113	975	939	400



## Crawford County—Oblong Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
32— S. E....	25	American Oil and Development Co.....	Wall, No. 4.....	483	Robinson-1.....	834	52	351	1,149	871	100	.....
	26	American Oil and Development Co.....	Wall, No. 5.....	488	Robinson-2.....	895	20	412	1,088	.....	.....	.....
					Shallow.....	770	29	282	1,218	.....	.....	.....
					Robinson-1.....	835	24	348	1,152	.....	.....	.....
					Robinson-2.....	890	15	402	1,098	.....	200	.....
33— S. W...	27	American Oil and Development Co.....	Wall, No. 6.....	489	Stray.....	830	15	341	1,159	834	.....	.....
					Robinson-1.....	850	45	361	1,139	890	400	.....
	28	American Oil and Development Co.....	Wall, No. 7.....	487	do.....	868	15	381	1,119	.....	.....	.....
					Robinson-2.....	890	15	403	1,097	.....	200	.....
	29	American Oil and Development Co.....	Wall, No. 17.....	483	Robinson-1.....	855	6	372	1,128	.....	Dry	.....
	1	Fidelity.....	Davidson, No. 7.....	482	.....	.....	.....	.....	.....	.....	.....	No record.....
	2	Fidelity.....	Davidson, No. 2.....	485	.....	.....	.....	.....	.....	.....	.....	do.....
	3	Fidelity.....	Davidson, No. 1.....	478	.....	.....	.....	.....	.....	.....	.....	do.....
	4	Fidelity.....	Davidson, No. 6.....	486	.....	.....	.....	.....	.....	.....	.....	do.....
	5	Fidelity.....	Davidson, No. 4.....	484	.....	.....	.....	.....	.....	.....	.....	do.....
	6	Fidelity.....	Davidson, No. 5.....	485	.....	.....	.....	.....	.....	.....	.....	do.....
	7	Fidelity.....	Davidson, No. 3.....	488	.....	.....	.....	.....	.....	.....	.....	do.....
	8	Liberty Oil and Gas Co...	Houghton, No. 4.....	484	Robinson-1.....	835	19	351	1,149	843	300	Shale gas, 615 feet.....
	9	Liberty Oil and Gas Co...	Houghton, No. 3.....	483	do.....	825	39	342	1,158	844	125	Salt water, 864 feet.....
	10	Liberty Oil and Gas Co...	Houghton, No. 2.....	479	Robinson-3.....	932	.....	449	1,051	.....	.....	.....
	11	Liberty Oil and Gas Co...	Houghton, No. 12.....	486	Robinson-1.....	823	32	344	1,156	831	200	.....
					Robinson-3.....	910	6	431	1,069	.....	.....	.....
	12	Liberty Oil and Gas Co...	Houghton, No. 1.....	486	Robinson-1.....	825	15	339	1,161	.....	.....	No record.....
					Robinson-2.....	879	16	393	1,107	879	.....	Shale gas, 600 feet.....
					Robinson-3.....	927	7	441	1,059	930	.....	Well abandoned because of fresh water.....



Crawford County—Robinson Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
4—S. E...	1	White & Cromack	Parker, No. 1	519	Shallow	927		408	1,092	950	Dry	Gas, 932 feet 945 feet
5—N. W...	1	Minnetonka	Wilson, No. 1	528	Robinson-1	975		447	1,053	1,200	Dry	
6—N. E...	1	Fisher	Randolph, No. 3	527	Shallow	885	20	358	1,142			
					Robinson-1	972	12	445	1,055			Salt water, 1,030 feet
N. W...	1	Fisher	Randolph, No. 1	519	Robinson-2	995	35	468	1,032			Salt water, 1,300 feet
	2	Fisher	Henry, No. 4	525		1,285		758	742	1,300	Dry	No record
	3	Fisher	Henry, No. 3	523	Robinson-2	983	23	460	1,040	988		
	1	Fisher	Randolph, No. 1	519	Stray	900	20	381	1,119			
N. W...	2	Ohio	W. Jones, No. 4	525	Robinson-2	1,059	6	540	960	1,088	Dry	Salt water, 1,065 feet
	3	Ohio	W. Jones, No. 2	524	Robinson-3	993	7	468	1,032			
	4	Ohio	W. Jones, No. 3	523	Robinson-2	1,005	13	480	1,020	1,009	4	
	5	Ohio	W. Jones, No. 1	520	Robinson-2	986		462	1,039	986	40	Gas, 986 feet
N. W...	6	Fisher	Randolph, No. 2	520	Robinson-3	983	7	469	1,031			
	7	Fisher	Henry, No. 1	515	Robinson-2	1,005	13	479	1,021			
	8	Fisher	Henry, No. 2	520	Robinson-4	1,080	8	461	1,039	894		Salt water
					Robinson-4	1,269	10	557	943		Dry	
N. W...	1	Fisher	Randolph, No. 1	519	Robinson-2	980	7	460	1,040			Gas, 995 feet
	2	Fisher	Henry, No. 2	520	Robinson-4	1,050	9	530	970	1,050	10	Salt water, 1,059 feet
	3	Fisher	Randolph, No. 3	520	Robinson-2	963	17	443	1,057			
	4	Fisher	Henry, No. 4	515	Robinson-3	996		476	1,024			
N. W...	5	Fisher	Henry, No. 1	515	Robinson-4	1,050	22	530	970	1,204	30	Gas, 887 feet (shell)
	6	Fisher	Henry, No. 2	520	Stray	902	5	387	1,113			
	7	Fisher	Henry, No. 3	520	Robinson-1	960	30	435	1,065	982	25	Gas, 955 feet
	8	Fisher	Henry, No. 4	520	Stray	890	30	370	1,130			
N. W...	1	Fisher	Henry, No. 5	520	Robinson-3	998	2	478	1,022	998	35	
	2	Fisher	Henry, No. 6	520	Robinson-3	998	2	478	1,022	998	35	
	3	Fisher	Henry, No. 7	520	Robinson-3	998	2	478	1,022	998	35	
	4	Fisher	Henry, No. 8	520	Robinson-3	998	2	478	1,022	998	35	

	9 Red Bank.	519 {	Cortelyou, No. 1 "B".	581	360	1,134	Gas, 955 feet, 3,000,000 cu bic feet gas.
	10 Red Bank.	519 {	Cortelyou, No. 2 "B".	577	32	1,146	20,3,000,000 cubic feet gas.
	11 Red Bank.	520 {	Cortelyou, No. 1 "R. B".	587	15	1,032	Show
	12 Red Bank.	523 {	Cortelyou, No. 2 "R. B".	576	6	1,044	50
	13 Ohio.	524 {	Cortelyou, No. 1.	581	20	1,141	50
	14 Ohio.	521	Cortelyou, No. 4.	583	20	1,021	No record.
	15 Ohio.	514 {	Cortelyou, No. 2.	586	18	1,058	Gas, 983 feet.
	16 Ohio.	517 {	Cortelyou, No. 3.	1,057	20	1,121	No record.
	17 Leeper.	524 {	Furman, No. 1.	1,073	10	1,044	Gas, 983 feet.
	18 Leeper.	515 {	Furman, No. 2.	1,013	12	1,004	Salt water.
	19 Leeper.	518 {	Furman, No. 3.	1,033	15	1,055	No record.
	20 Leeper.	522 {	Furman, No. 4.	586	37	1,126	do
8 W.	1 Davis.	514 {	Dean, No. 1.	520	10	1,102	Dry No record.
	2 Davis.	530 {	Dean, No. 2.	558	30	1,084	Dry No record.
8 E.	1 Leeper.	522 {	C. Jones, No. 1.	990	485	1,032	Gas, 995 feet.
				1,017	485	1,005	Dry Salt water.
7- N W.	1 Davis.	530 {	Dean, No. 2.	910	5	1,120	Light
	2 Davis.	514 {	Dean, No. 1.	909	23	1,114	Light
8 W.	1 Ohio.	535 {	Q. Jones, No. 1.	1,016	491	1,009	Dry Salt water.
8 W.	1 Ohio.	492 {	Grisswald, No. 1.	990	10	1,002	Dry Salt water, 1,000 feet.
8 W.	1 Unknown.	498 {	Grisswald, No. 1.	.....	.....	.....	Dry No record.
8 W.	1 Unknown.	506 {	Combs, No. 1.	.....	.....	.....	Dry ..do.
12- N. E.	1 Central Oil & Gas Co.	508 {	Dean, No. 1.	908	397	1,103	Gas Gas, 830 feet.
	2 Central Oil & Gas Co.	508 {	Dean, No. 2.	915	10	1,063	Light Salt water, 943 feet. Well abandoned
N. W.	3 Ohio.	508 {	W. Jones, No. 1.	907	399	1,101	Gas Gas, 833 feet.
	4 Ohio.	509 {	W. Jones, No. 2.	912	12	1,097	30 Gas, 912 feet.
	5 Ohio.	508 {	W. Jones, No. 3.	912	404	1,096	15 Gas, 935 feet.
	6 Superior.	495 {	Richard, No. 1.	.....	.....	.....	Dry No record.
	7 Superior.	511 {	Richard, No. 2.	915	405	1,065	75 Gas, 918 feet.
8 W.	1 Jennings.	511 {	Messers, No. 1.	.....	.....	.....	Dry No record.
	2 Ohio.	537 {	Wakenfeld, No. 1.	898	6	1,129	Dry Salt water.
				970	443	1,057	
13- N. W.	1 Ohio.	522 {	Wakenfeld, No. 2.	922	30	1,100	
				960	10	1,093	
				943	490	1,046	

## Crawford County—Robinson Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
13—	N. W.	2 Ohio.....	Wakefield, No. 3.....	524	Robinson-3.....	995	.....	471	1,029	.....	.....	.....	.....
		3 Ohio.....	Taylor, No. 5.....	520	do.....	985	15	465	1,035	.....	.....	.....	.....
		4 Ohio.....	Taylor, No. 3.....	520	Robinson-1.....	930	25	410	1,090	.....	.....	.....	.....
	S. W.	1 Morrison.....	Walter, No. 1.....	522 {	do.....	929	.....	407	1,083	.....	.....	.....	.....
		2 Ohio.....	Mann, No. 1.....	517	Robinson-2.....	1,233	.....	711	789	.....	.....	Dry	Salt water.
16—						938	.....	421	1,079	938	.....	9	Gas, 938 feet.
	N. E.	1 Red Bank.....	Rafferty, No. 1.....	533 {	Stray.....	910	.....	377	1,123	.....	.....	.....	Gas, 915 feet.
					Robinson-3.....	1,037	.....	504	996	.....	1,037	.....	Salt water.
17—	N. E.	1 Red Bank.....	Stephenson, No. 1.....	510	Robinson-1 (?).....	927	12	417	1,083	932	939	15	Well abandoned.....
18—	S. W.	1 Red Bank.....	Mann, No. 1.....	520	Stray.....	883	.....	363	1,137	.....	.....	.....	.....
31—													
	S. W.	1 Samuels & Booth.....	F. Burner, No. 5.....	528 {	Robinson-2.....	972	12	444	1,056	974	.....	.....	North 40 acres.
					Robinson-3.....	1,030	15	502	998	.....	.....	.....	Gas, 1,035 feet. North 40 acres.
						1,235	.....	707	793	.....	1,238	.....	Salt water. Well abandoned.
					Robinson-3.....	1,040	20	512	988	.....	.....	.....	Gas, 1,040 feet. North 40 acres.
		2 Samuels & Booth.....	F. Burner, No. 3.....	528 {	Robinson-4.....	1,120	15	592	908	1,120	1,135	.....	.....
												.....	No record.
		3 Unknown.....	Ill. Central, No. 1.....	529	Robinson-3.....	1,020	27	490	1,010	1,020	.....	.....	North 40 acres.
		4 Samuels & Booth.....	F. Burner, No. 2.....	530	Robinson-4.....	1,095	42	565	935	.....	.....	.....	.....
					Robinson-2.....	980	20	450	1,050	990	.....	.....	North 40 acres.
		5 Samuels & Booth.....	F. Burner, No. 4.....	530	Robinson-4.....	1,107	33	577	923	.....	1,140	.....	.....
					Stray.....	870	20	336	1,164	950	.....	.....	North 40 acres.
		6 Samuels & Booth.....	F. Burner, No. 1.....	534 {	Robinson-4.....	1,096	34	562	938	1,096	1,130	.....	South 40 acres. Gas, 890 feet.
					Stray.....	898	17	356	1,144	.....	.....	.....	.....
		7 Samuels & Booth.....	F. Burner, No. 1.....	532	Robinson-2.....	986	18	454	1,046	940	1,004	.....	.....



## Crawford County—Robinson Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.	Altitude above datum—feet.	Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
30— S. W.	10	Ohio	W. Jones, No. 2	506	Stray Robinson-3	352 444	1,118 1,038	970		Gas, 948 feet. Salt water, 980 feet.
	11	Ohio	W. Jones, No. 1	498	Stray Robinson-3	372	1,128	953	15	
	12	Ohio	W. Jones, No. 7	513	Robinson-2	447	1,053	940	20	
	13	Ohio	W. Jones, No. 3	498	do Robinson-3	439 481	1,031 1,018	922	60	Gas, 925 feet. Salt water.
	14	Ohio	W. Jones, No. 6	513	Robinson-3	414	1,034	950	80	Gas, 932 feet.
	15	Ohio	W. Jones, No. 5	513	Robinson-2	470	1,073	950		
	16	Ohio	W. Jones, No. 4	488	Robinson-2	418	1,064	954	75	Gas, 949 feet. Salt water, 972 feet.
	17	Ohio	Warnock, No. 3	486	Robinson-1	410	1,080	900		No record.
	18	Ohio	Warnock, No. 2	488				890		do.
	19	Ohio	Warnock, No. 1	496				910		do.
	20	Ohio	Walters, No. 3	522	Stray	377	1,123	901	75	Salt water, 929 feet.
	21	Ohio	Walters, No. 2	522	do	385	1,135			Dry. No record.
	22	Ohio	Walters, No. 10	520						
	23	Ohio	Walters, No. 5	522	Robinson-1	440	1,052			
	24	Ohio	Walters, No. 16	505	Stray	418	1,062			
	25	Ohio	Walters, No. 9	528	Robinson-1 (?)	366	1,149	900	40	
S E.	26	Ohio	Walters, No. 20	528	Stray	385	1,108			
	27	Ohio	Walters, No. 18	530	Robinson-2	373	1,135	973	20	Salt water, 986 feet.
	28	Ohio	Walters, No. 23	518	Stray	410	1,053	947	80	
	29	Ohio	Walters, No. 21	521	do	371	1,124	974	8	
	30	Ohio	Walters, No. 22	521	Robinson-1	445	1,141			
					Stray	427	1,073	947		
					Robinson-2	431	1,126			Gas, 908 feet.
						433	1,007	944	20	

[illegible]

**Lawrence County—Bridgeport Township.**

Section No.	Map No.	Name of oil company.	Sand.						Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
			Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.						
N. E.	1	Snowden Bros.	Kirkwood	1,644	34	1,116	364	1,644	1,678		Salt water, 870 feet.	
			Bridgeport	870		346	1,154			Salt water, 1,390 feet.		
			Buchanan	1,360		836	664			Salt water, 1,475 feet.		
			'Gas'	1,475		901	540			Salt water, 1,908 feet.		
			Kirkwood-1	1,668		1,144	356					
		Snowden Bros.	Kirkwood-2	1,632	19	1,153	342	1,632				
			Kirkwood-3	1,712	15	1,168	315					
								1,727	1,755			



## Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Name.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
						Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
1— N. E.	3	Bridgeport	Klinger, No. 1	530	Bridgeport	840	20	310	1,190				Salt water, 840 feet.
					do	930	30	400	1,100				Salt water, 930 feet.
					Bridgeport and Buchanan	1,040	314	510	990				Salt water, 1,185 feet. This probably includes the Buchanan No. 1 sand.
					"Gas"	1,490	15	950	550				Salt water, 1,480 feet.
					Stray	1,535	5	1,005	495				Salt water, 1,535 feet.
					Kirkwood	1,723	17	1,193	307		1,740	40	
					Bridgeport	790	30	270	1,230				
					do	1,110	130	590	910				Salt water, 1,145 feet.
					Stray	1,275	25	755	745				
					Buchanan-1	1,345	25	825	675				
S. E.	4	Snowden Bros.	E. Fyfe	520	Buchanan-2	1,440	23	920	590				Salt water, 1,440 feet.
					Stray	1,567	12	1,047	453				Salt water, 1,567 feet.
					Kirkwood	1,633	24	1,113	387	1,641	1,665		
					do	1,657	52	1,142	358	1,662	1,711	75	
					Bridgeport	1,115	60	598	902				
					Kirkwood	1,659	20	1,142	358	1,659	1,688	100	
					do	1,689	30	1,155	345	1,670	1,704	65	
					do	1,705	20	1,191	309				
					McClosky	1,942	5	1,424	72	1,942	2,003		Dry
					Kirkwood	1,690	29	1,176	324	1,700	1,905	72	
5— N. E.	1	Ohio	J. Lewis, No. 4	461	do	1,689	20	1,177	323	1,690	1,720	30	Gas, 1,700 feet.
					do	1,412	70	951	549	1,437	1,482	100	Gas, 1,437 feet.
					do	1,420	20	964	536		1,445		
					Bridgeport	1,040	12	578	922				
					Kirkwood	1,426	12	964	536	1,426	1,450	45	Gas, 1,426 feet.
					Bridgeport-2	895	35	441	1,059		933		
					Bridgeport-1	790	15	321	1,179				
					Bridgeport-2	895	25	436	1,061		920		
					do	1,420	20	964	536				
					do	1,426	12	964	536				

6	Ohio	J. Lewis, No. 8.	472	Bridgeport-1	788	8	316	1,184	.....	.....	.....	.....	.....
7	Ohio	J. Lewis, No. 10.	481	Bridgeport-2	795	30	323	1,177	.....	930	.....	.....	.....
		do		do	895	40	414	1,086	.....	.....	.....	.....	.....
8	Ohio	J. Lewis, No. 9.	496	Bridgeport-1	810	10	324	1,176	.....	.....	.....	.....	.....
9	Ohio	Eshelman, No. 9.	500	Bridgeport-2	885	5	399	1,101	.....	.....	.....	.....	.....
10	Ohio	Eshelman, No. 6.	496	Bridgeport-3	895	38	409	1,091	.....	933	.....	.....	.....
11	Ohio	Eshelman, No. 5.	493	do	926	.....	426	1,074	935	140	Gas, 930 feet.	.....	.....
12	Ohio	Eshelman, No. 1.	470	Kirkwood	1,428	10	932	568	.....	Show	.....	.....	.....
13	Ohio	Eshelman, No. 4.	490	Stray	1,612	8	1,116	384	.....	Gas	.....	.....	.....
14	Ohio	Eshelman, No. 3.	484	Bridgeport-1	787	10	294	1,206	.....	1,736	.....	.....	.....
		do		Bridgeport-2	895	200	402	1,098	.....	1,038	.....	.....	.....
		do		Bridgeport-1	815	10	325	1,175	.....	.....	No record.	.....	.....
		do		Bridgeport-2	790	15	306	1,194	.....	1,045	Show	Well abandoned.	.....
		do		Bridgeport-3	891	14	407	1,093	.....	.....	.....	.....	.....
		"Gas"		"Gas"	1,035	15	551	949	.....	.....	.....	.....	.....
		do		do	1,300	10	816	684	.....	1,310	.....	Originally a gas well.	.....
15	Ohio	Eshelman, No. 2.	493	Bridgeport-1	795	33	302	1,198	.....	.....	Show	.....	.....
		do		Bridgeport-2	865	10	372	1,128	.....	.....	Show	.....	.....
		do		Bridgeport-3	880	26	387	1,113	.....	.....	Good	.....	.....
		do		Bridgeport-4	927	.....	434	1,066	.....	.....	.....	.....	.....
		do		Bridgeport-5	990	15	497	1,003	.....	1,000	200	Best production.	.....
		do		Bridgeport-1	860	40	382	1,118	.....	.....	.....	.....	.....
16	Ohio	Eshelman, No. 7.	478	Bridgeport-2	940	25	462	1,038	.....	1,000	.....	.....	.....
17	Ohio	Eshelman, No. 8.	465	Bridgeport-1	860	15	395	1,105	.....	.....	.....	.....	.....
		do		Bridgeport-2	960	10	495	1,005	.....	1,007	.....	.....	.....
18	Ohio	Eshelman, No. 10.	465	do	905	28	440	1,060	.....	.....	.....	.....	.....
		do		Kirkwood	1,376	15	911	589	1,376	1,394	60	.....	.....
1	Ohio	Cooper, No. 11.	495	Bridgeport-1	801	27	306	1,194	.....	.....	.....	.....	.....
2	Ohio	Cooper, No. 7.	509	Bridgeport-2	892	138	397	1,103	1,005	1,030	700	Gas, 1,005 feet.	.....
3	Ohio	Cooper, No. 14.	498	Bridgeport-1	815	10	306	1,194	.....	.....	.....	.....	.....
4	Ohio	Cooper, No. 16.	500	Bridgeport-3	975	60	466	1,034	980	1,035	75	.....	.....
5	Ohio	Cooper, No. 17.	492	Bridgeport-1	802	.....	304	1,196	.....	.....	.....	.....	.....
6	Ohio	Cooper, No. 18.	495	Bridgeport-2	990	.....	492	1,004	1,030	1,033	125	.....	.....
7	Ohio	Cooper, No. 8.	522	Bridgeport-1	810	.....	310	1,190	.....	.....	.....	.....	.....
8	Ohio	Cooper, No. 5.	521	Bridgeport-2	995	.....	495	1,005	995	1,032	100	.....	.....
9	Ohio	Cooper No. 25.	508	do	880	46	388	1,112	.....	.....	.....	.....	.....
10	Ohio	Cooper, No. 1.	507	Bridgeport-3	972	32	480	1,020	985	1,024	150	.....	.....
11	Ohio	McElfresh, No. 11.	507	Bridgeport-1	821	34	326	1,174	.....	.....	.....	.....	.....
12	Ohio	McElfresh, No. 12.	504	Bridgeport-2	988	43	493	1,007	1,000	1,031	100	.....	.....
13	Ohio	McElfresh, No. 3.	519	Bridgeport-3	915	113	393	1,107	1,015	1,028	50	.....	.....
		do		Bridgeport-1	800	20	279	1,221	.....	.....	.....	.....	.....
		do		Bridgeport-2	838	5	317	1,183	.....	.....	.....	.....	.....
		do		Bridgeport-3	902	63	381	1,119	.....	.....	.....	.....	.....
		do		"Gas"	1,375	36	867	633	1,390	1,414	170	Salt water, 965 feet.	.....
		do		Bridgeport-1	877	33	370	1,130	887	.....	.....	.....	.....
		do		Bridgeport-2	992	.....	485	1,015	.....	1,025	125	.....	.....
		do		do	945	.....	438	1,062	.....	1,400	.....	.....	.....
		do		"Gas"	1,310	32	806	694	.....	.....	.....	.....	.....
		do		Kirkwood	1,386	9	882	618	.....	1,424	.....	.....	.....
		do		Bridgeport-1	842	18	323	1,177	.....	.....	Dry	.....	.....
		do		Bridgeport-3	1,035	25	516	984	1,045	1,062	50	.....	.....

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
5— N. W.	14	Ohio.....	McElfresh, No. 2.....	513	Bridgeport-2.....	925	22	412	1,088	.....	.....	.....
	15	Ohio.....	McElfresh, No. 4.....	520	Bridgeport-3.....	1,030	20	517	1,983	1,065	.....	.....
	16	Ohio.....	McElfresh, No. 1.....	503	Bridgeport.....	982	12	462	1,038	.....	.....	.....
	17	Ohio.....	McElfresh, No. 18.....	519	..do.....	1,033	27	513	1,987	1,062	.....	.....
					Bridgeport-1.....	820	22	317	1,183	.....	.....	.....
					Bridgeport-2.....	915	21	412	1,088	1,040	.....	.....
					Stray.....	1,150	20	631	1,869	.....	.....	.....
					Kirkwood.....	1,413	33	894	606	1,440	36	Gas, 1,420 feet.
					Bridgeport-1.....	834	21	305	1,195	.....	.....	.....
	18	Ohio.....	McElfresh, No. 6.....	529	Bridgeport-2.....	905	.....	476	1,024	.....	.....	.....
					Bridgeport-3.....	965	20	436	1,064	.....	.....	.....
					"Gas,".....	1,340	.....	811	689	.....	.....	.....
					Kirkwood.....	1,432	13	903	597	.....	.....	.....
	19	Ohio.....	McElfresh, No. 14.....	530	..do.....	1,433	6	903	597	.....	.....	.....
	20	Ohio.....	McElfresh, No. 10.....	520	McClosky.....	1,683	12	1,153	347	1,687	50	Gas, 1,673 feet.
	21	Ohio.....	McElfresh, No. 16.....	506	Bridgeport-2.....	892	90	372	1,128	1,035	.....	.....
	22	Ohio.....	McElfresh, No. 5.....	505	Tracey.....	1,520	30	1,014	486	.....	.....	.....
5 W.	23	Ohio.....	Cooper, No. 19.....	504	McClosky.....	1,665	13	1,159	341	1,668	70	Gas, 1,675 feet.
	24	Ohio.....	Cooper, No. 26.....	503	Bridgeport-2.....	902	50	397	1,103	1,038	75	.....
					..do.....	915	53	411	1,059	918	.....	.....
					Kirkwood.....	1,410	30	907	593	.....	.....	.....
	25	Ohio.....	Cooper, No. 13.....	506	McClosky.....	1,650	13	1,147	353	1,655	800	Gas, 1,649 feet.
	26	Ohio.....	Cooper, No. 9.....	507	Bridgeport-1.....	810	35	304	1,196	1,066	75	.....
					Bridgeport-3.....	1,015	51	509	1,991	1,030	.....	.....
					Bridgeport-1.....	819	12	312	1,188	.....	.....	.....
					Bridgeport-3.....	1,010	45	503	997	1,020	100	.....
					Bridgeport-2.....	914	51	427	1,073	965	40	.....
	27	Ohio.....	Cooper, No. 21.....	487	..do.....	909	42	431	1,069	951	175	.....
	1	Ohio.....	Cooper, No. 22.....	478	..do.....	915	38	440	1,060	953	22	.....
	2	Ohio.....	Cooper, No. 24.....	475	..do.....	913	39	1,438	1,062	952	.....	Well abandoned
	3	Ohio.....	Cooper, No. 23.....	475	Bridgeport-1.....	820	140	336	1,164	970	117	Gas, 902 feet.
	4	Ohio.....	Cooper, No. 20.....	484	Bridgeport-2.....	900	70	411	1,080	970	100	.....

6	Ohio.....	Newell, No. 10.....	499	do.....	896	14	397	1,103	933	972	.....	.....
7	Ohio.....	Newell, No. 12.....	507	Bridgeport-3.....	930	42	431	1,069	970	990	.....	75
8	Henley, Watson, et al.....	School House Lot, No. 1.....	521	do.....	962	28	455	1,045	.....	.....	.....	100
9	Henley, Watson, et al.....	School House Lot, No. 2.....	520	Bridgeport-3.....	.....	.....	.....	.....	.....	.....	No record	.....
10	Ohio.....	J. King, No. 26.....	518	do.....	.....	.....	.....	.....	.....	.....	do.	.....
11	Ohio.....	Newell, No. 11.....	511	Bridgeport-3.....	989	23	471	1,029	994	1,012	.....	150
12	Ohio.....	Newell, No. 13.....	508	do.....	979	31	468	1,032	979	1,010	.....	100
13	Ohio.....	Newel, No. 3.....	492	Kirkwood.....	1,494	12	986	574	.....	.....	.....	.....
14	Ohio.....	Newell, No. 1.....	467	McClosky.....	1,733	12	1,225	275	1,745	1,793	.....	90
15	Ohio.....	Newell, No. 2.....	456	Bridgeport-1.....	1,777	19	285	1,215	.....	.....	Gas, 1,745 feet.....	.....
16	Ohio.....	Newell, No. 4.....	468	Bridgeport-2.....	810	121	318	1,182	.....	931	.....	.....
17	Ohio.....	Newell, No. 5.....	462	Bridgeport-1.....	770	52	303	1,197	.....	.....	.....	.....
18	Ohio.....	Newell, No. 6.....	469	Bridgeport-2.....	847	95	380	1,120	869	942	.....	.....
19	Ohio.....	Newell, No. 7.....	459	do.....	834	32	378	1,122	.....	.....	.....	.....
20	Ohio.....	Newell, No. 8.....	462	Bridgeport-3.....	930	10	474	1,028	930	959	.....	.....
21	Ohio.....	Newell, No. 9.....	482	Bridgeport-1.....	789	66	321	1,179	798	.....	.....	.....
22	Ohio.....	Cooper, No. 6.....	470	Bridgeport-2.....	852	40	384	1,116	890	918	.....	.....
23	Ohio.....	Cooper, No. 4.....	467	Bridgeport-1.....	800	55	338	1,162	.....	.....	.....	.....
24	Ohio.....	Cooper, No. 3.....	476	Bridgeport-2.....	887	21	425	1,075	900	942	.....	.....
25	Ohio.....	Cooper, No. 2.....	477	do.....	842	13	373	1,127	852	900	.....	.....
26	Ohio.....	Cooper, No. 10.....	487	Bridgeport-1.....	777	47	318	1,182	.....	.....	.....	.....
27	Ohio.....	Cooper, No. 15.....	502	Bridgeport-2.....	823	30	364	1,136	.....	890	.....	.....
1	Ohio.....	Robbins, No. 1.....	475	Bridgeport-1.....	788	44	326	1,174	.....	.....	.....	.....
2	Ohio.....	Robbins, No. 7.....	495	Bridgeport-2.....	895	40	433	1,067	900	939	.....	.....
3	Ohio.....	Robbins, No. 5.....	492	Buchanan.....	785	51	303	1,197	.....	.....	.....	.....
4	Ohio.....	Robbins, No. 11.....	484	Bridgeport-1.....	806	46	436	1,064	890	940	.....	50
5	Ohio.....	Robbins, No. 15.....	504	Bridgeport-2.....	918	16	703	797	915	952	.....	50
6	Ohio.....	Robbins, No. 13.....	506	Bridgeport-3.....	830	12	328	1,172	.....	.....	.....	.....
7	Ohio.....	Robbins, No. 10.....	480	Kirkwood.....	1,427	23	925	575	1,431	1,450	.....	50
8	Ohio.....	Robbins, No. 2.....	477	Bridgeport-1.....	800	25	825	1,175	805	.....	Gas, 1,427 feet.....	.....
9	Ohio.....	Robbins, No. 3.....	481	Bridgeport-2.....	892	34	417	1,083	895	926	.....	.....
10	Ohio.....	Robbins, No. 12.....	485	Bridgeport-1.....	820	40	325	1,175	.....	.....	.....	.....
				Bridgeport-2.....	879	71	384	1,116	885	950	.....	150
				Bridgeport-1.....	840	30	348	1,152	.....	.....	.....	.....
				Bridgeport-2.....	897	54	405	1,095	914	951	.....	125
				Bridgeport-1.....	820	135	336	1,164	895	955	.....	125
				Bridgeport-3.....	910	53	406	1,094	930	963	.....	65
				Bridgeport, 2.....	842	119	336	1,164	842	961	.....	68
				Bridgeport-1.....	820	133	340	1,160	895	953	.....	65
				do.....	795	.....	318	1,182	920	.....	.....	.....
				Bridgeport-2.....	875	33	398	1,102	915	928	.....	75
				Bridgeport-1.....	800	20	319	1,181	.....	.....	.....	.....
				Bridgeport-3.....	905	59	424	1,076	910	964	.....	100
				do.....	893	61	408	1,092	893	954	.....	60

## Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
6—  N. E..	10	Snowden Bros.	Cummings, No. 9.	496	Bridgeport.....	825	12	329	1,171	837	Show	.....
					..do.....	920	30	424	1,076	.....	.....	Salt water, 990 feet.....
					..do.....	976	29	490	1,020	.....	.....	.....
					Bridgeport and Buchanan-1.....	1,025	145	529	971	.....	.....	Hole full water, 1,065 feet.
					Buchanan-2.....	1,190	25	694	806	.....	.....	.....
					Kirkwood-1.....	1,412	7	916	584	.....	.....	.....
					Kirkwood-2.....	1,428	7	932	568	1,428	Show	.....
					Kirkwood-3.....	1,460	5	964	536	.....	.....	.....
					Tracey.....	1,580	6	1,084	416	.....	.....	.....
					McClosky.....	1,626	36	1,130	370	1,650	400	Lime and sand. Gas, 1,638 feet.....
					Bridgeport-1.....	825	20	324	1,176	.....	.....	.....
					Bridgeport-2.....	945	40	444	1,056	985	.....	.....
11	Snowden Bros.		Cummings, No. 4.	501	Bridgeport-3.....	990	17	489	1,011	1,007	45	.....
					Bridgeport.....	815	30	314	1,186	835	Show	.....
					..do.....	890	10	379	1,121	.....	.....	.....
					..do.....	930	56	429	1,071	.....	.....	.....
					..do.....	992	28	491	1,009	975	.....	.....
					Buchanan.....	1,025	125	524	976	.....	.....	Salt water, 1,020 feet.....
					Stray.....	1,172	15	671	829	.....	.....	.....
					"Gas".....	1,351	22	850	650	1,351	Show	Show of gas, 1,351 feet. Salt water, 1,365 feet.....
					Stray.....	1,393	7	892	608	.....	.....	.....
					Kirkwood.....	1,460	25	959	541	.....	.....	.....
					McClosky.....	1,675	50	1,174	326	1,700	.....	.....
										1,752	.....	.....

13	Snowden Bros.	Cummings, No. 7	876	357	1,143	875																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																</
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Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
N. E..	10	Snowden Bros.....	Cummings, No. 9.....	496	Bridgeport.....	825	12	329	1,171	937	.....	Show	.....
					..do.....	920	30	424	1,076	.....	.....	Salt water, 990 feet.....	
					..do.....	976	29	490	1,020	.....	.....	Hole full water, 1,065 feet.....	
					Bridgeport and Buchanan-1.....	1,025	145	529	971	.....	.....	.....	
					Buchanan-2.....	1,190	25	694	806	.....	.....	.....	
					Kirkwood-1.....	1,412	7	916	584	.....	.....	.....	
					Kirkwood-2.....	1,428	7	932	568	1,428	Show	.....	
					Kirkwood-3.....	1,460	5	964	536	.....	.....	.....	
					Tracey.....	1,580	6	1,084	416	.....	.....	.....	
					McClosky.....	1,626	36	1,130	370	1,650	400	Lime and sand. Gas, 1,638 feet.....	
					Bridgeport-1.....	825	20	324	1,176	.....	.....	.....	
					Bridgeport-2.....	945	40	444	1,056	985	.....	.....	
11	Snowden Bros.....	Cummings, No. 4.....	501	Bridgeport-3.....	990	17	489	1,011	.....	1,007	45	.....	
				Bridgeport.....	815	30	314	1,186	835	Show	.....		
				..do.....	880	10	379	1,121	.....	.....	.....		
				..do.....	930	56	429	1,071	.....	.....	.....		
				..do.....	992	28	491	1,009	975	.....	.....	.....	
				Buchanan.....	1,025	125	524	976	.....	.....	Salt water, 1,020 feet.....		
				Stray.....	1,172	15	671	839	.....	.....	.....		
				"Gas".....	1,351	22	850	660	1,351	Show	Show of gas, 1,351 feet. Salt water, 1,365 feet.....		
				Stray.....	1,393	7	892	608	.....	.....	.....		
				Kirkwood.....	1,460	25	969	541	.....	.....	.....		
				McClosky.....	1,675	50	1,174	326	1,700	.....	.....		
									1,752	.....	.....		





## Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
6—N. W.	1	Ohio.....	Cullison, No. 2.....	539	Kirkwood.....	1,526	56	986	514	1,553	65	.....
	2	Ohio.....	Cullison, No. 6.....	532	do.....	1,600	40	1,068	432	1,815	30	Gas, 1,687 feet.
	3	Ohio.....	Cullison, No. 5.....	523	Tracey.....	1,685	14	1,163	347	1,898	45	.....
	4	Ohio.....	Cullison, No. 5.....	522	Kirkwood.....	1,598	24	1,076	425	1,623	35	.....
	5	Ohio.....	Seyern, No. 6.....	523	do.....	1,599	26	1,067	433	1,599	20	Gas, 1,575 feet.
	6	Ohio.....	Seyern, No. 8.....	523	do.....	1,572	28	1,049	451	1,590	90	Gas, 1,566 feet.
	7	Ohio.....	Seyern, No. 2.....	520	Kirkwood.....	1,557	34	1,037	463	1,590	100	.....
	8	Ohio.....	Seyern, No. 3.....	524	Bridgeport-2.....	941	22	417	1,063	1,559	250	.....
	9	Bridgeport.....	Abernathy, No. 1.....	531	Kirkwood.....	1,559	31	1,035	465	1,600	.....	Salt water, 960 feet.
	10	Bridgeport.....	Abernathy, No. 2.....	512	Bridgeport-2.....	1,600	23	1,069	431	1,623	.....	Salt water, 1,500 feet.
	11	Snowden Bros.....	Fyffe, No. 1.....	526	Stray.....	1,500	15	988	512	.....	125	.....
	12	Snowden Bros.....	Fyffe, No. 4.....	519	Kirkwood.....	1,587	17	1,075	425	1,612	.....	Salt water, 830 feet.
	13	Snowden Bros.....	Fyffe, No. 6.....	512	Bridgeport.....	815	25	297	1,203	.....	.....	Salt water, 870 feet.
	14	Ohio.....	Seyern, No. 4.....	505	do.....	860	30	342	1,153	.....	.....	Salt water, 1,225 feet.
					Buchanan-1.....	1,215	80	697	803	.....	.....	Salt water, 1,316 feet.
					Buchanan-2.....	1,300	60	782	718	.....	.....	Salt water, 1,470 feet.
					Stray.....	1,460	25	942	558	1,470	50	.....
					Kirkwood.....	1,571	39	1,063	447	1,610	.....	.....
					Bridgeport-1.....	882	28	356	1,144	.....	.....	.....
					Bridgeport-2.....	1,010	10	494	1,016	.....	.....	.....
					Bridgeport-3.....	1,105	135	579	921	.....	.....	.....
					Buchanan.....	1,323	22	797	703	.....	.....	.....
					"Gas".....	1,405	7	879	621	.....	.....	.....
					Stray.....	1,528	17	1,002	498	.....	Show	Hard sand.
					Kirkwood.....	1,612	23	1,086	414	1,612	135	.....
					do.....	1,605	22	1,086	414	1,637	.....	.....
					Bridgeport-3.....	1,083	.....	571	929	.....	.....	Salt water, 1,063 feet.
					Buchanan.....	1,335	.....	828	677	.....	.....	Salt water, 1,325 feet.
					Stray.....	1,435	.....	923	577	.....	.....	Salt, water, 1,435 feet.
					Kirkwood.....	1,605	27	1,098	407	1,632	100	.....
					do.....	1,614	38	1,109	391	1,634	150	.....

[illegible]

## Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
7—S. E....	4	Shaffer & Smathers.....	W. Finley, No. 35.....	495	Kirkwood.....	1,550	35	1,065	435	1,552	100	.....
	5	Allshouse & Son.....	Long, No. 3.....	487	Kirkwood-1.....	1,549	38	1,062	438	.....	.....	.....
	6	Allshouse & Son.....	Long, No. 2.....	480	Kirkwood-2.....	1,615	15	1,128	372	.....	.....	.....
	7	Allshouse & Son.....	Long, No. 5.....	478	Kirkwood-1.....	1,556	41	1,076	424	.....	.....	.....
	8	Allshouse & Son.....	Long, No. 8.....	471	Kirkwood-2.....	1,627	6	1,147	353	.....	.....	.....
	9	Allshouse & Son.....	Long, No. 9.....	460	Kirkwood-1.....	1,565	45	1,087	413	.....	.....	.....
	10	Allshouse & Son.....	Long, No. 11.....	460	Kirkwood-2.....	1,631	12	1,153	347	.....	.....	.....
	11	Allshouse & Son.....	Long, No. 7.....	496	Kirkwood-1.....	1,585	43	1,094	406	.....	.....	.....
	12	Allshouse & Son.....	Long, No. 4.....	489	Kirkwood-2.....	1,631	8	1,160	340	.....	.....	.....
	13	Allshouse & Son.....	Long, No. 6.....	500	Kirkwood-1.....	1,661	9	1,190	310	.....	.....	.....
	14	Allshouse & Son.....	Long, No. 10.....	495	Kirkwood-2.....	1,734	17	1,263	237	.....	.....	.....
					Stray.....	1,585	33	1,125	375	.....	.....	.....
					McClosky.....	1,643	13	1,183	317	.....	.....	.....
					Kirkwood-1.....	1,685	5	1,225	275	.....	.....	.....
					Stray.....	1,706	22	1,246	254	.....	.....	.....
					Tracey.....	1,747	19	1,287	213	.....	.....	.....
					McClosky.....	1,590	38	1,120	380	.....	.....	.....
					Kirkwood-1.....	1,644	7	1,184	316	.....	.....	.....
					Kirkwood-2.....	1,676	19	1,216	294	.....	.....	.....
					Tracey.....	1,762	10	1,302	198	.....	.....	.....
					McClosky.....	1,560	40	1,074	426	.....	.....	.....
					Kirkwood-1.....	1,623	21	1,137	363	.....	.....	.....
					Kirkwood-2.....	1,662	8	1,176	324	.....	.....	.....
					Kirkwood-3.....	1,734	14	1,248	252	.....	.....	.....
					Tracey.....	1,563	37	1,074	426	.....	.....	.....
					Kirkwood-1.....	1,619	13	1,130	370	.....	.....	.....
					Kirkwood-2.....	1,623	10	1,123	377	.....	.....	.....
					Kirkwood.....	1,730	8	1,230	270	.....	.....	.....
					Tracey.....	1,600	16	1,105	395	.....	.....	.....
					Kirkwood-1.....	1,651	9	1,156	344	.....	.....	.....
					Kirkwood-2.....	1,690	6	1,196	306	.....	.....	.....
					Stray.....	1,712	8	1,217	283	.....	.....	.....
					Tracey.....	1,712	8	1,217	283	.....	.....	.....

15	Big Four	Buchanan Hrs., No. 9.	498	Kirkwood-1	1,648	5	1,150	350	1,684	30	.....
16	Big Four	Buchanan Hrs., No. 15.	502	Kirkwood-2	1,672	12	1,174	326	.....	.....	.....
17	Big Four	Buchanan Hrs., No. 13.	503	Bridgeport	1,942	48	1,440	1,060	990	100	Salt water, 1,509 feet.
18	Big Four	Buchanan Hrs., No. 11.	496	Kirkwood-1	1,646	14	1,143	357	1,651	.....	.....
19	Big Four	Buchanan Hrs., No. 14.	505	Kirkwood-2	1,670	8	1,167	333	.....	.....	.....
20	Ohio	A. Griggs, No. 1.	492	Tracey	1,722	10	1,219	281	1,722	.....	Sour oil
21	Ohio	A. Griggs, No. 2.	481	Kirkwood-1	1,653	12	1,157	343	.....	.....	Salt water, 1,492 feet.
22	Ohio	Gray, No. 2.	486	Kirkwood-2	1,673	12	1,177	323	.....	75	.....
1	Ohio	Judy, No. 6.	474	Kirkwood	1,646	8	1,141	359	.....	.....	Salt water, 1,493 feet.
2	Ohio	Judy, No. 3.	479	Tracey	1,732	6	1,227	273	.....	100	.....
3	Ohio	Judy, No. 2.	474	Kirkwood-1	1,626	12	1,133	367	1,630	.....	.....
4	Ohio	Judy, No. 5.	462	Kirkwood-2	1,659	13	1,167	333	.....	65	Gas, 1,662 feet.
5	Ohio	Judy, No. 4.	457	Kirkwood	1,641	11	1,160	340	.....	.....	.....
6	Ohio	Judy, No. 7.	470	Tracey	1,738	12	1,257	243	1,745	40	.....
7	Ohio	Judy, No. 1.	470	do	1,770	12	1,284	216	1,770	5	.....
8	Ohio	Booe, No. 23.	456	Bridgeport-2	885	72	411	1,089	885	957	.....
9	Ohio	Booe, No. 38.	471	Bridgeport-1	830	40	351	1,149	.....	.....	.....
10	Ohio	Booe, No. 14.	471	Bridgeport-2	892	65	413	1,087	900	.....	Salt water, 955 feet.
11	Ohio	Booe, No. 28.	468	Bridgeport-1	822	12	348	1,152	.....	.....	.....
12	Ohio	Booe, No. 18.	464	Bridgeport-2	898	46	456	1,044	923	75	Salt water, 948 feet.
13	Ohio	Booe, No. 22.	457	do	918	28	377	1,123	920	98	.....
14	Ohio	Booe, No. 7.	456	Bridgeport-1	834	64	452	1,048	.....	.....	.....
15	Ohio	Booe, No. 13.	450	Bridgeport-2	909	25	910	590	920	50	.....
16	Ohio	Booe, No. 31.	460	Gas	1,390	25	977	523	.....	60	.....
17	Ohio	Booe, No. 20.	463	Kirkwood	1,447	33	977	523	1,452	.....	.....
18	Ohio	Booe, No. 33.	452	Bridgeport	836	25	366	1,124	.....	.....	.....
19	Ohio	Booe, No. 35.	452	do	913	29	443	1,037	913	.....	.....
20	Ohio	Booe, No. 4.	447	Bridgeport-2	914	60	419	1,081	918	75	.....
21	Ohio	Booe, No. 37.	457	Bridgeport	890	29	892	608	.....	.....	Gas, 1,363 feet.
22	Ohio	Booe, No. 21.	457	Gas	1,363	32	457	1,013	1,375	100	.....
23	Ohio	Booe, No. 26.	476	Bridgeport-2	926	45	424	1,076	920	.....	Dry
24	Ohio	Booe, No. 15.	476	Bridgeport-1	888	46	451	1,019	.....	No record	.....
25	Ohio	Booe, No. 17.	465	do	908	38	436	1,064	890	.....	.....
26	Ohio	Booe, No. 16.	459	do	892	53	423	1,077	910	.....	.....
				do	873	38	420	1,080	895	.....	.....
				do	890	15	372	1,128	874	.....	.....
				Bridgeport-1	835	.....	423	1,077	890	.....	Salt water, 935 feet.
				Bridgeport-2	896	9	422	1,078	.....	50	.....
				Bridgeport	874	43	433	1,067	884	.....	.....
				do	885	53	424	1,076	890	220	.....
				Bridgeport-2	876	40	431	1,069	929	115	.....
				do	878	43	416	1,084	927	60	.....
				do	873	30	353	1,147	883	100	.....
				Bridgeport-1	810	47	433	1,067	883	.....	.....
				Bridgeport-2	890	25	859	641	902	50	.....
				Buchanan	1,335	20	994	506	.....	.....	.....
				Kirkwood	1,470	30	436	1,064	1,475	50	.....
				Bridgeport-2	915	59	429	1,071	918	100	Gas, 918 feet.
				do	894	40	429	1,071	945	125	Salt water, 953 feet.
				do	888	40	429	1,071	953	125	Gas, 890 feet.

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
8—N. E...	27	Ohio.....	Williams, No. 2.....	459	Bridgeport-2.....	887	.....	428	1,072	888	930	150	.....
	28	Ohio.....	Williams, No. 7.....	476	Bridgeport-1.....	908	10	332	1,166	.....	.....	.....	.....
	29	Ohio.....	Williams, No. 4.....	485	Bridgeport-2.....	910	59	434	1,066	920	969	100	.....
	30	Ohio.....	Williams, No. 8.....	480	do.....	923	.....	438	1,062	930	974	125	.....
	31	Ohio.....	Williams, No. 6.....	489	Kirkwood.....	1,460	22	980	1,520	1,460	1,485	55	.....
	32	Ohio.....	Williams, No. 5.....	488	Bridgeport-1.....	848	12	359	1,141	.....	.....	.....	.....
	33	Ohio.....	Williams, No. 1.....	474	Bridgeport-2.....	905	46	416	1,064	920	951	100	.....
	34	Ohio.....	Williams, No. 3.....	467	Bridgeport-1.....	837	6	349	1,151	.....	.....	.....	.....
	1	Ohio.....	J. King, No. 3.....	463	Bridgeport-2.....	906	50	418	1,082	910	956	125	.....
	2	Ohio.....	J. King, No. 4.....	464	Bridgeport-1.....	801	24	327	1,178	806	.....	.....	.....
	3	Ohio.....	J. King, No. 5.....	454	Bridgeport-2.....	900	26	426	1,074	.....	926	100	.....
	4	Ohio.....	Booe, No. 25.....	452	do.....	877	57	420	1,080	890	944	100	.....
N. W..	5	Ohio.....	Booe, No. 12.....	452	Bridgeport-1.....	800	20	337	1,163	.....	.....	.....	.....
	6	Ohio.....	Booe, No. 11.....	450	Bridgeport-2.....	872	28	409	1,091	907	947	.....	.....
	7	Ohio.....	Booe, No. 24.....	450	Bridgeport-3.....	800	20	336	1,164	.....	.....	.....	.....
	8	Ohio.....	Booe, No. 32.....	452	Bridgeport-2.....	925	30	461	1,039	925	955	.....	.....
	9	Ohio.....	Booe, No. 36.....	452	Bridgeport-3.....	884	16	430	1,070	.....	.....	.....	.....
	10	Ohio.....	Booe, No. 10.....	452	Bridgeport-2.....	916	18	462	1,038	916	934	75	.....
	11	Lantz.....	Burns, No. 13.....	459	Kirkwood.....	1,406	26	954	1,546	1,414	1,434	.....	.....
	12	Lantz.....	Burns, No. 1.....	459	Bridgeport-1.....	822	8	370	1,130	.....	.....	.....	.....
					Bridgeport-2.....	890	48	438	1,062	901	938	50	.....
					do.....	878	47	428	1,072	890	926	75	.....
					Buchanan.....	1,255	12	805	1,665	1,255	1,267	80	.....
					Bridgeport-2.....	1,892	50	440	1,060	.....	.....	.....	.....
				Buchanan.....	1,265	40	813	687	.....	.....	.....	.....	
				Kirkwood.....	1,444	33	992	508	1,447	1,479	160	.....	
				Buchanan.....	1,254	36	802	699	1,268	1,300	700	Gas, 1,263 feet.	
				Bridgeport-2.....	880	30	428	1,072	894	930	75	.....	
				do.....	899	41	440	1,060	.....	.....	.....	.....	
				Buchanan.....	1,255	60	796	704	1,260	.....	.....	.....	
				Kirkwood.....	1,450	58	991	509	1,460	1,506	387	Gas, 1,266 feet.	
				Bridgeport-2.....	899	27	440	1,060	909	940	Light	.....	

46	Ohio	Shaffer & Smathers	Thorn, No. 13.	493	Buchanan	1,318	17	825	675	1,319	1,335	225	
47	Ohio	Shaffer & Smathers	Thorn, No. 14.	494	do	1,297		803	697	1,305	1,314	200	
48	Ohio	Shaffer & Smathers	Thorn, No. 17.	473	do	1,272		799	701	1,276	1,288	200	
49	Ohio	Shaffer & Smathers	Thorn, No. 28.	459	do	1,294	17	835	665	1,298	1,311	100	
1	Shaffer & Smathers	W. E. Finley, No. 40.	417	Kirkwood-1	1,480	35	1,033	467	1,515			100	
2	Shaffer & Smathers	W. E. Finley, No. 27.	447	Kirkwood-2	1,580	39	1,133	367			1,624		No record.
3	Shaffer & Smathers	W. E. Finley, No. 2.	447	Bridgeport-2		26	452	1,048	914	925			Well abandoned.
4	Shaffer & Smathers	W. E. Finley, No. 16.	448	Kirkwood	1,485	35	1,037	463					
5	Shaffer & Smathers	W. E. Finley, No. 4.	459	Bridgeport-2	1,253	15	474	1,026	936			150	
6	Shaffer & Smathers	W. E. Finley, No. 20.	459	Buchanan	1,504	15	799	701	1,258	1,273			
7	Shaffer & Smathers	W. E. Finley, No. 6.	458	Kirkwood	1,504	19	1,045	455					
8	Shaffer & Smathers	W. E. Finley, No. 19.	459	Buchanan	1,288	14	830	670	1,294	1,302		100	
9	Shaffer & Smathers	W. E. Finley, No. 18.	453	do	1,350		891	609					
10	Shaffer & Smathers	W. E. Finley, No. 18.	453	Kirkwood	1,510	21	1,051	449					Gas, 1,508 feet.
11	Shaffer & Smathers	W. E. Finley, No. 7.	456	Kirkwood	1,576	25	1,055	445	1,508				
12	Shaffer & Smathers	W. E. Finley, No. 24.	448	Buchanan	1,317	38	861	639	1,321				
13	Shaffer & Smathers	W. E. Finley, No. 1.	449	Kirkwood	1,489	69	1,041	459		1,553			No record.
14	Shaffer & Smathers	W. E. Finley, No. 25.	450	Kirkwood	1,485	33	1,035	405		1,553			
15	Shaffer & Smathers	W. E. Finley, No. 28.	457	do	1,487	45	1,030	470	1,505	1,532		600	
16	Shaffer & Smathers	W. E. Finley, No. 31.	462	do	1,523	23	1,061	439	1,528	1,546			
17	Shaffer & Smathers	W. E. Finley, No. 37.	450	Kirkwood-1	1,492	31	1,042	458	1,507				
18	Shaffer & Smathers	W. E. Finley, No. 34.	451	Kirkwood-2	1,532	26	1,082	418		1,558			Salt water, 1,336 feet.
19	Shaffer & Smathers	W. E. Finley, No. 22.	450	Buchanan	1,336	79	885	615					
20	Shaffer & Smathers	W. E. Finley, No. 39.	463	Kirkwood-1	1,546	24	1,095	405	1,547				
21	Shaffer & Smathers	W. E. Finley, No. 8.	457	Kirkwood-2	1,587	16	1,136	364		1,612			
22	Shaffer & Smathers	W. E. Finley, No. 23.	460	Kirkwood-1	1,522	22	1,072	428					
23	Shaffer & Smathers	W. E. Finley, No. 9.	469	Kirkwood-2	1,566	20	1,116	384		1,608			No record.
24	Shaffer & Smathers	W. E. Finley, No. 17.	476	Buchanan	1,340		883	617	1,350				
25	Shaffer & Smathers	W. E. Finley, No. 5.	479	Kirkwood	1,536	12	1,079	421		1,548			
26	Shaffer & Smathers	W. E. Finley, No. 38.	479	do	1,537	76	1,077	423		1,616			
27	Shaffer & Smathers	W. E. Finley, No. 13.	473	Buchanan	1,317	22	848	652		1,349			
28	Shaffer & Smathers	W. E. Finley, No. 17.	476	do	1,345	15	869	631					
29	Shaffer & Smathers	W. E. Finley, No. 5.	479	Kirkwood	1,580	64	1,104	396	1,580	1,644		200	Salt water.
30	Shaffer & Smathers	W. E. Finley, No. 38.	479	Buchanan	1,339	21	860	640	1,345	1,368			
31	Shaffer & Smathers	W. E. Finley, No. 15.	469	Stray	1,440		961	539					
32	Shaffer & Smathers	W. E. Finley, No. 38.	479	Kirkwood-1	1,678	33	1,099	401	1,584				
33	Shaffer & Smathers	W. E. Finley, No. 38.	479	Kirkwood-2	1,630	30	1,151	349	1,660				
34	Shaffer & Smathers	W. E. Finley, No. 38.	479	McClosky	1,840		1,361	139	1,840	1,890			
35	Shaffer & Smathers	W. E. Finley, No. 38.	479	Buchanan	1,289	17	819	681		1,306			
36	Shaffer & Smathers	W. E. Finley, No. 38.	479	do	1,270	30	799	701		1,300			
37	Shaffer & Smathers	W. E. Finley, No. 38.	479	do	1,270	65	797	703					Salt water, 1,345 feet.
38	Shaffer & Smathers	W. E. Finley, No. 38.	479	do	1,345	30	872	628					No record.
39	Shaffer & Smathers	W. E. Finley, No. 38.	479	do									do
40	Shaffer & Smathers	W. E. Finley, No. 38.	479	Buchanan	1,270	69	801	699				376	
41	Shaffer & Smathers	W. E. Finley, No. 38.	479	Kirkwood	1,537	29	1,068	432		1,574		500	

N. W....

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.	
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.					Altitude above datum plane—feet.
N. W.	32	Lantz	Burns, No. 9	503	Bridgeport-3 Buchanan Kirkwood-2 McClosky	960 1,300 1,600 1,775	35 54 10 35	457 797 1,097 1,272	1,043 703 403 228	1,306 1,600 1,810	Show 125 145	Redrilled Green oil	
	33	Lantz	Burns, No. 11	513	Buchanan Kirkwood Bridgeport-3	1,312 1,525 970	37 25 217	799 1,012 468	701 488 1,032	1,376 1,535 1,567	80	Salt water, 982 feet	
	34	Lantz	Burns, No. 10	502	"Gas" Bridgeport-2	1,415 918	55 36	913 431	587 1,069	945 980	Dry 210	Salt water, 982 feet	
	35	Lantz	Burns, No. 7	487	do	930	38	454	1,046	932	145	Known as Cooper sand	
	36	Lantz	Burns, No. 4	476	Kirkwood	1,616	13	1,117	383	968	1,620		
S W.	1	Big Four	Buchanan Hrs., No. 5	499	do	1,623	37	1,125	375	1,660			
	2	Big Four	Tabor, No. 1	498	Bridgeport	930	45	1,443	1,057	945			Salt water, 975 feet
	3	Lantz	Zeller, No. 4	487	do	945	51	456	1,044				Salt water, 975 feet
	4	Lantz	Zeller, No. 5	489	do	1,010	110	521	979				Salt water, 1,010 feet
	5	Lantz	Zeller, No. 3	482	Buchanan-1	1,304	25	815	685				
	6	Lantz	Zeller, No. 16	475	Buchanan-2	1,345	27	856	644	1,350	180		
	7	Lantz	Kinsey Lot, No. 1	472	Kirkwood-1	1,512	28	1,023	477	1,522			
	8	Lantz	Zeller, Lot No 1	462	Kirkwood-2	1,665	20	1,166	334				
	9	Lantz	Zeller, No. 11	450	Bridgeport	909	56	427	1,073	933	967	145	Drilling
													Salt water, 855 feet
											40	Salt water, 945 feet	
											125		
												Salt water, 1,028 feet	





## Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
17—	N. E...											
23	Ohio	Thorn, No. 7.	450	Buchanan	912	28	462	1,038	912	940	200	Well abandoned.
24	Ohio	Thorn, No. 27.	454	do	1,265	...	811	689	1,278	1,284	200	...
25	Ohio	Thorn, No. 19.	453	do	1,270	...	817	683	1,276	1,289	200	...
26	Ohio	Thorn, No. 8.	456	do	1,265	14	809	691	1,265	1,279	...	...
27	Ohio	Thorn, No. 30.	457	do	1,256	100	799	701	...	...	...	...
28	Ohio	Thorn, No. 10.	462	Kirkwood	1,498	28	1,041	459	1,507	1,526	400	Gas, 1,503 feet.
29	Ohio	Thorn, No. 31.	463	Buchanan	1,263	18	801	699	1,264	1,281	350	...
30	Ohio	Thorn, No. 16.	454	Kirkwood	1,505	24	1,042	458	1,510	1,534	200	Gas, 1,512 feet.
31	Ohio	Thorn, No. 18.	461	Buchanan	1,250	...	796	704	1,252	1,268	200	...
32	Ohio	Thorn, No. 15.	466	do	1,254	...	793	707	1,258	1,280	200	...
33	Ohio	Thorn, No. 11.	469	do	1,247	...	781	719	1,250	1,265	250	...
34	Ohio	Thorn, No. 33.	469	do	1,245	16	776	724	1,250	1,261	250	...
35	Ohio	Thorn, No. 2.	473	Kirkwood	1,242	83	773	727	...	...	...	...
36	Ohio	Thorn, No. 32.	473	Buchanan	1,521	26	1,052	448	1,530	1,547	150	Gas, 1,525 feet.
37	Ohio	Thorn, No. 12.	473	do	1,254	11	781	719	1,254	1,365	...	...
38	Ohio	Thorn, No. 4.	473	do	1,263	110	790	710	...	...	...	...
39	Ohio	Thorn, No. 36.	473	Kirkwood	1,534	24	1,061	439	1,540	1,561	200	Gas, 1,536 feet.
40	Ohio	Thorn, No. 39.	465	Buchanan	1,252	19	779	721	1,258	1,271	200	...
41	Ohio	Thorn, No. 6.	465	Bridgeport-3.	941	19	468	1,032	...	960	200	Well abandoned.
42	Ohio	Thorn, No. 37.	470	Buchanan	1,250	100	777	723	...	...	...	...
43	Ohio	Thorn, No. 38.	479	Gas	1,470	20	997	503	1,473	1,537	...	Gas, 1,475 feet. Salt water 1,537 feet.
44	Ohio	Thorn, No. 9.	486	Bridgeport	880	110	415	1,085	...	...	...	...
45	Ohio	Thorn, No. 40.	491	Buchanan	1,246	29	781	719	1,246	1,275	200	...
				do	1,236	46	771	729	...	1,282	...	...
				do	1,253	87	783	717	...	...	...	...
				Kirkwood	1,523	67	1,053	447	1,525	1,802	300	Gas, 1,525 feet.
				Buchanan	1,278	72	799	701	...	...	...	...
				Kirkwood	1,540	32	1,061	439	1,543	1,572	250	Gas, 1,547 feet.
				Buchanan	1,290	21	804	696	...	1,311	...	...
				Bridgeport	950	230	459	1,041	...	...	...	...
				Buchanan	1,325	60	834	686	...	...	...	...
				Kirkwood	1,555	24	1,064	436	1,555	1,579	70	Gas, 1,550 feet.

18	Snowden Bros.	O'Donnel, No. 29.	483	Bridgeport.	950	15	467	1,033	960	.....	Show	.....	Salt water, 1,020 feet.
				do.	995	90	512	1,988	.....	.....	.....	.....	.....
				do.	1,095	60	612	888	.....	.....	.....	.....	.....
				Buchanan	1,280	22	797	703	1,282	1,302	100	.....	Salt water, 1,020 feet.
19	Snowden Bros.	O'Donnel, No. 27.	469	Bridgeport.	894	241	425	1,075	.....	.....	.....	.....	Salt water, 1,316 feet.
				Buchanan	1,288	50	819	681	1,308	.....	.....	.....	.....
				Kirkwood-1.	1,431	84	1,012	488	1,542	.....	.....	.....	.....
				Kirkwood-2.	1,616	39	1,147	353	.....	.....	.....	.....	Salt water, 1,616 feet.
20	Snowden Bros.	O'Donnel, No. 3.	469	Buchanan	1,280	15	811	689	1,295	1,305	700	.....	Salt water, 1,040 feet.
				Bridgeport.	1,015	100	523	977	.....	.....	.....	.....	.....
21	Snowden Bros.	O'Donnel, No. 30.	492	do.	1,135	26	643	857	.....	.....	.....	.....	Salt water, 1,355 feet.
				Buchanan	1,319	76	827	673	1,325	.....	.....	.....	.....
				Kirkwood	1,565	32	1,073	427	1,574	1,619	.....	.....	.....
				Buchanan	1,333	7	836	664	.....	.....	.....	.....	.....
22	Snowden Bros.	O'Donnel, No. 4.	497	do.	1,334	20	831	669	1,350	1,359	500	.....	.....
23	Snowden Bros.	O'Donnel, No. 5.	503	do.	1,346	31	836	664	1,370	1,377	400	.....	.....
24	Snowden Bros.	O'Donnel, No. 6.	510	do.	1,319	31	822	678	1,325	1,350	300	.....	.....
25	Snowden Bros.	O'Donnel, No. 11.	497	do.	1,310	31	829	671	1,320	1,335	500	.....	.....
26	Snowden Bros.	O'Donnel, No. 10.	481	do.	940	10	456	1,044	.....	.....	.....	.....	Salt water, 1,060 feet.
				Bridgeport	1,312	.....	828	672	.....	1,331	400	.....	.....
27	Snowden Bros.	O'Donnel, No. 16.	484	Buchanan	1,070	19	570	930	.....	.....	.....	.....	Salt water, 765, 1,070 and 1,220 feet.
				Bridgeport.	.....	.....	.....	.....	.....	.....	.....	.....	.....
28	Snowden Bros.	O'Donnel, No. 24.	500	Buchanan	1,327	19	827	673	.....	1,346	200	.....	.....
				do.	1,350	23	842	658	1,375	1,378	300	.....	.....
29	Snowden Bros.	O'Donnel, No. 9.	508	do.	1,372	26	869	631	1,385	1,398	200	.....	Salt water, 1,389 feet.
30	Snowden Bros.	O'Donnel, No. 13.	503	do.	1,030	70	529	971	.....	.....	.....	.....	Salt water, 750 feet.
				Bridgeport.	1,349	16	848	652	1,349	1,365	200	.....	.....
31	Snowden Bros.	O'Donnel, No. 23.	501	Buchanan	1,538	37	1,076	424	1,557	1,598	150	.....	.....
				Kirkwood	1,534	30	1,061	419	1,550	1,596	.....	.....	.....
1	Shaffer & Smathers	W. E. Finley, No. 32.	462	do.	1,569	39	1,109	391	1,572	1,621	25	.....	.....
2	Shaffer & Smathers	W. E. Finley, No. 30.	453	do.	1,325	55	870	630	.....	.....	.....	.....	Salt water, 1,365 feet.
3	Shaffer & Smathers	W. E. Finley, No. 36.	460	Buchanan	1,565	5	1,110	390	.....	1,615	.....	.....	.....
4	Shaffer & Smathers	W. E. Finley, No. 29.	455	Kirkwood	.....	.....	.....	.....	.....	.....	.....	.....	No record.
5	Unknown.	P. Caney, No. 1.	472	.....	.....	.....	.....	.....	.....	.....	.....	.....	do.
6	Unknown.	P. Caney, No. 2.	453	.....	.....	.....	.....	.....	.....	.....	.....	.....	do.
7	Unknown.	P. Caney, No. 3.	456	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8	Ohio.	A. Griggs, No. 3.	456	Kirkwood	1,575	35	1,119	381	1,580	1,620	70	.....	Gas, 1,579 feet.
9	Ohio.	A. Griggs, No. 2.	456	do.	1,585	33	1,129	371	1,590	1,620	15	.....	Gas, 1,592 feet.
10	Ohio.	A. Griggs, No. 1.	477	do.	1,604	36	1,127	373	1,608	1,640	30	.....	Gas, 1,606 feet. Salt water, 1,640 feet.
				do.	.....	.....	.....	.....	.....	.....	.....	.....	.....
11	Ohio.	Bell, No. 3.	478	do.	1,630	26	1,152	348	1,630	2,015	.....	.....	Salt water, 1,900 feet.
				do.	.....	.....	.....	.....	.....	.....	.....	.....	Well abandoned.
12	Ohio.	Bell, No. 2.	458	do.	1,566	31	1,108	392	1,569	1,597	60	.....	Gas, 1,568 feet.
13	Ohio.	Bell, No. 1.	455	do.	1,595	28	1,140	360	1,597	1,623	20	.....	Gas, 1,607 feet.
				Bridgeport.	1,135	140	625	875	.....	.....	.....	.....	.....
				Buchanan	1,430	190	920	580	.....	.....	.....	.....	.....
				Gas.	1,755	30	1,245	255	.....	.....	.....	.....	.....
1	Ohio.	M. Stivers, No. 1.	510	Kirkwood	1,800	15	1,380	120	.....	.....	.....	.....	.....
				Stray.	2,042	2	1,532	32	2,042	2,072	Dry Show	.....	.....

N. E.

19—

N. E.

## Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
17— N. W..	32	Ohio.....	Diver, No. 3.....	469	Buchanan.....	1,272	68	808	692	1,341	.....	No record.....
	33	Ohio.....	Diver, No. 10.....	464	do.....	1,291	20	827	673	1,311	.....	.....
	34	Ohio.....	Diver, No. 8.....	464	do.....	1,280	84	816	684	.....	.....	Salt water, 1,320 feet.....
	35	Ohio.....	Diver, No. 14.....	464	Kirkwood.....	1,537	72	1,073	427	1,545	150	.....
	36	Ohio.....	Diver, No. 7.....	455	Buchanan.....	1,284	43	829	671	.....	.....	.....
	37	Ohio.....	Diver, No. 11.....	462	Kirkwood.....	1,526	19	1,071	429	1,545	.....	.....
	38	Ohio.....	Diver, No. 5.....	463	Buchanan.....	1,276	72	814	686	.....	.....	.....
	39	Ohio.....	Diver, No. 2.....	464	Kirkwood.....	1,526	28	1,064	436	1,563	300	.....
	40	Ohio.....	Diver, No. 12.....	464	Buchanan.....	1,270	27	817	683	1,297	.....	No record.....
	1	Shaffer & Smathers.....	Diver, No. 13.....	480	Buchanan.....	1,364	88	900	700	1,553	.....	.....
	2	Shaffer & Smathers.....	W. E. Finley, No. 10.....	483	Kirkwood.....	1,510	35	1,046	454	1,526	.....	.....
	3	Shaffer & Smathers.....	W. E. Finley, No. 14.....	489	do.....	1,320	30	837	663	1,327	.....	.....
	4	Shaffer & Smathers.....	W. E. Finley, No. 11.....	492	do.....	1,328	105	839	661	1,340	.....	No "Finley" sand present.....
	5	Shaffer & Smathers.....	W. E. Finley, No. 21.....	502	Kirkwood-2.....	1,648	12	1,159	341	1,648	.....	.....
	6	Shaffer & Smathers.....	W. E. Finley, No. 15.....	504	Buchanan.....	1,322	25	840	660	1,357	.....	.....
	7	Shaffer & Smathers.....	W. E. Finley, No. 12.....	495	do.....	1,357	9	855	645	1,366	.....	.....
	8	Ohio.....	Clark, No. 6.....	508	do.....	1,351	24	847	653	1,375	.....	.....
S. W..	9	Ohio.....	Clark, No. 3.....	515	do.....	1,336	20	841	659	1,356	.....	.....
	10	Ohio.....	Clark, No. 2.....	506	do.....	1,365	18	857	643	1,370	150	.....
	11	Ohio.....	Clark, No. 4.....	525	do.....	1,355	28	840	660	1,383	300	.....
	12	Ohio.....	Clark, No. 5.....	517	do.....	1,339	25	833	667	1,364	150	.....
	13	Ohio.....	Clark, No. 1.....	527	do.....	1,385	20	869	640	1,397	400	.....
	14	Ohio.....	Rogers, No. 8.....	512	do.....	1,360	.....	843	657	1,381	250	.....
	15	Ohio.....	Rogers, No. 15.....	508	do.....	1,400	9	873	627	1,409	226	.....
	16	Ohio.....	Rogers, No. 17.....	510	do.....	1,370	10	858	642	1,380	200	.....
	17	Ohio.....	Rogers, No. 10.....	509	do.....	1,350	.....	842	658	1,362	260	.....
	18	Ohio.....	Rogers, No. 14.....	487	do.....	1,337	16	827	673	1,352	260	.....

19	Ohio.....	Rogers, No. 13.....	527	do.....	1,354	12	827	673	1,361	1,366	250	.....
20	Ohio.....	Rogers, No. 12.....	491	do.....	1,319	.....	828	672	1,328	1,338	275	.....
21	Ohio.....	Rogers, No. 11.....	490	do.....	1,322	23	832	668	1,328	1,345	150	.....
22	Ohio.....	Rogers, No. 9.....	489	do.....	1,312	.....	823	677	1,320	1,332	250	.....
23	Ohio.....	Rogers, No. 7.....	504	do.....	1,310	18	806	694	1,312	1,328	200	.....
				Bridgeport.....	1,974	16	473	1,027	980	.....	.....	.....
24	Ohio.....	Rogers, No. 18.....	501	Buchanan.....	1,285	30	794	706	1,295	.....	.....	Salt water
				Stray.....	1,353	22	552	648	.....	.....	.....	.....
				Kirkwood.....	1,575	15	1,074	426	.....	.....	.....	.....
				Tracey.....	1,740	10	1,239	261	.....	.....	.....	.....
				McClosky.....	1,894	21	1,393	107	1,894	2,007	200	Gas, 1,894 feet.
25	Ohio.....	Rogers, No. 3.....	497	Buchanan-1.....	1,283	.....	786	714	1,288	.....	350	.....
				Buchanan-2.....	1,312	.....	815	685	.....	1,312	.....	.....
26	Ohio.....	Rogers, No. 5.....	477	Buchanan.....	1,288	26	811	689	1,293	1,314	250	.....
27	Ohio.....	Rogers, No. 6.....	478	do.....	1,308	25	830	670	1,312	1,333	200	.....
28	Ohio.....	Rogers, No. 4.....	480	do.....	1,302	22	822	678	1,310	1,324	250	.....
29	Ohio.....	Rogers, No. 2.....	473	do.....	1,287	.....	814	686	1,290	1,311	200	.....
30	Ohio.....	Rogers, No. 1.....	483	do.....	1,280	.....	797	703	1,285	1,286	100	.....
31	Ohio.....	Rogers, No. 16.....	483	do.....	1,290	90	807	693	.....	.....	80	Gas, 1,582 feet.
		School House Lot.....	514	Kirkwood.....	1,569	16	1,086	414	1,580	1,782	.....	No record.
				Bridgeport.....	985	341	475	1,025	.....	.....	.....	Salt water, 1,060 and 1,190 feet.
2	Snowden Bros.....	O'Donnel, No. 20.....	510	Buchanan.....	1,332	10	822	678	.....	1,342	400	.....
				Bridgeport.....	1,025	.....	511	989	.....	.....	.....	Salt water, 1,060 and 1,180 feet.
3	Snowden Bros.....	O'Donnel, No. 19.....	514	Buchanan.....	1,329	16	815	685	1,337	1,345	500	.....
				Bridgeport.....	1,015	.....	502	998	.....	.....	.....	Salt water, 1,075 and 1,200 feet.
4	Snowden Bros.....	O'Donnel, No. 21.....	513	Buchanan.....	1,340	13	827	673	1,340	.....	.....	.....
5	Snowden Bros.....	O'Donnel, No. 22.....	506	do.....	1,354	13	848	652	1,354	1,367	300	Salt water, 820 and 1,090 feet.
				Bridgeport.....	1,000	.....	494	1,006	.....	.....	.....	.....
6	Snowden Bros.....	O'Donnel, No. 17.....	506	Stray.....	1,210	.....	704	796	.....	.....	.....	Salt water, 1,015 feet.
				Buchanan.....	1,340	13	834	666	.....	1,353	300	Salt water, 1,210 feet.
7	Snowden Bros.....	O'Donnel, No. 14.....	510	Bridgeport.....	960	80	450	1,050	960	.....	Show	.....
8	Snowden Bros.....	O'Donnel, No. 12.....	506	Buchanan.....	1,315	25	805	685	1,331	1,340	300	.....
				do.....	1,294	25	788	712	1,305	1,319	400	.....
				Bridgeport.....	805	10	307	1,193	.....	.....	.....	Hole full of salt water, 990 feet.
				do.....	962	86	464	1,036	970	.....	.....	.....
				do.....	1,050	20	552	948	.....	.....	.....	.....
				do.....	1,085	40	597	903	.....	.....	.....	.....
				Stray.....	1,150	25	652	848	.....	.....	.....	.....
9	Snowden Bros.....	O'Donnel, No. 28.....	498	Buchanan.....	1,280	115	782	718	1,288	.....	.....	Salt water, 1,360 feet.
				Stray.....	1,425	13	927	573	.....	.....	.....	.....
				Kirkwood-1.....	1,593	32	1,095	405	1,600	.....	Show	.....
				Kirkwood-2.....	1,638	12	1,140	360	.....	.....	.....	.....
				Kirkwood-3.....	1,676	52	1,178	322	.....	.....	.....	.....
				Tracey.....	1,757	8	1,259	241	.....	.....	.....	.....
				McClosky.....	1,835	398	1,337	163	1,860	2,223	Show	Limestone.

## Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
17—S. E....	10	Snowden Bros.....	O'Donnel, No. 15.....	500	Bridgeport-3.....	1,000	.....	500	1,000	.....	.....	.....
					Buchanan.....	1,297	28	797	1,703	1,325	400	.....
					Bridgeport.....	1,953	10	474	1,026	.....	.....	.....
					...do.....	987	10	488	1,012	.....	.....	.....
					...do.....	995	160	516	984	.....	.....	.....
					Buchanan.....	1,298	72	819	681	1,305	.....	Salt water, 1,060 feet.
	11	Snowden Bros.....	O'Donnel, No. 25.....	479	Kirkwood-1.....	1,506	11	1,027	473	1,506	.....	Salt water, 1,344 feet.
					Kirkwood-2.....	1,534	4	1,055	445	.....	.....	.....
					Kirkwood-3.....	1,564	25	1,085	415	1,566	.....	Some gas, 1,566 feet.
					Kirkwood-4.....	1,601	5	1,122	378	1,606	.....	Gas, 1,606 feet.
	12	Snowden Bros.....	O'Donnel, No. 8.....	494	Buchanan.....	1,283	29	1,789	711	1,290	600	.....
					Bridgeport-2.....	1,940	60	444	1,056	.....	.....	.....
	13	Snowden Bros.....	O'Donnel, No. 7.....	496	Stray.....	1,120	.....	624	876	.....	.....	Salt water.
					Buchanan.....	1,281	10	785	715	1,291	400	.....
					Bridgeport.....	1,960	40	479	1,021	.....	.....	.....
	14	Snowden Bros.....	O'Donnel, No. 18.....	481	Stray.....	1,220	.....	739	761	.....	.....	Salt water, 1,010 feet.
					Buchanan.....	1,282	33	801	699	.....	.....	Salt water, 1,220 feet.
					...do.....	1,318	5	837	663	1,350	150	Slate, 1,315 to 1,318 feet.
	15	Snowden Bros.....	O'Donnel, No. 1.....	481	Bridgeport-2.....	1,949	31	468	1,032	.....	125	Salt water, 1,318 feet.
					Buchanan.....	1,282	3	801	699	1,285	.....	.....
					Bridgeport.....	1,942	18	461	1,039	942	.....	.....
					...do.....	1,015	.....	534	986	.....	.....	Salt water.
					Buchanan.....	1,325	48	844	656	1,325	.....	.....
	16	Snowden Bros.....	O'Donnel, No. 26.....	481	Kirkwood-1.....	1,560	25	1,079	421	1,560	.....	.....
					Kirkwood-2.....	1,628	20	1,147	353	1,628	.....	.....
					Kirkwood-3.....	1,665	36	1,184	316	.....	.....	.....
					Tracey-1.....	1,710	15	1,229	271	.....	.....	.....
					Tracey-2.....	1,730	2	1,249	251	1,730	.....	Quit in lime.
	17	Snowden Bros.....	O'Donnel, No. 2.....	481	Stray.....	1,283	.....	1,249	698	1,747	600	.....
						1,283	.....	1,802	.....	1,321	.....	.....



## Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
19— S. E.	1	Ohio	LeGrand, No. 1	472	Bridgeport	1,125	140	653	847			
					Buchanan	1,420	190	948	552			Salt water, 1,640 feet
					Stray	1,640	25	1,168	332			
					Kirkwood	1,912	25	1,440	60	2,005	Dry	
20— N. E.	1	Ohio	E. Lutz, No. 1	500	Bridgeport	1,080	140	580	920			
					Buchanan	1,395	105	895	605			
					Kirkwood	1,605	25	1,105	395	1,605	15	Gas, 1,946 to 1,950 feet
					Tracey	1,792	20	1,292	208	2,000		
	2	Ohio	Millhouse, No. 1	512	Buchanan	1,378	102	866	634			
					Kirkwood	1,705	16	1,193	307	1,721	Dry	Salt water, 1,719 feet
					Buchanan	1,398		892	608	1,398		Well abandoned
	3	Ohio	Miller, No. 1	506	do	1,363	7	846	654	1,370	300	
					do	1,398	5	882	618	1,403	25	Salt water, 1,403 feet
	6	Ohio	Miller, No. 18	516	do	1,410	60	894	606			
					Tracey	1,771	12	1,255	245	1,783	Gas	Gas, 1,771 feet. Salt water, 1,740 feet
N. W.	7	Ohio	Miller, No. 15	510	Buchanan	1,371	20	861	639	1,388		
					do	1,364	7	846	654	1,366		
					do	1,352	15	831	669	1,367	350	
					do	1,346	6	830	670	1,346		Salt water, 1,740 feet
	10	Ohio	Miller, No. 19	516	Tracey	1,810	10	1,294	206			Well abandoned
					Buchanan	1,343	10	828	672	1,347	325	
	11	Ohio	Miller, No. 5	515	do	1,351	12	839	661	1,363	400	
					do	1,355	25	835	665	1,377	200	
	2	Ohio	Miller, No. 12	520	do	1,374	12	867	633	1,384	150	
					do	1,381	2	858	642	1,381		
	4	Ohio	Miller, No. 14	507	do	1,362	24	837	663	1,379	250	
					do	1,358	6	844	656	1,364	200	
	6	Ohio	Miller, No. 4	514	do	1,383	7	867	633			
					do	1,406	6	870	634	1,412	Dry	
S. W.	1	Ohio	Miller, No. 23	502	do							Drilling







3	Snowden.....	Clevey, No. 1.....	510	Bridgeport..... do..... do..... do..... do..... Stray..... Buchanan-1..... Buchanan-2.....	770 890 1,010 1,065 1,140 1,463 1,545 1,567	25 15 10 15 193 20 10 33	200 380 500 555 630 853 1,035 1,057	1,240 1,120 1,000 945 870 547 465 443	..... ..... ..... ..... ..... ..... ..... Dry	..... ..... ..... ..... ..... ..... ..... 1,600	..... ..... ..... ..... ..... ..... ..... .....	Salt water, 795 feet. Salt water, 906 feet. ..... Salt water, 1,140 feet. Gas sand..... ..... ..... .....	
1	Ohio.....	School House Lot, No. 2.....	536	Bridgeport-2..... Bridgeport-3.....	912 1,020	21 25	376 484	1,124 1,016	..... .....	..... 75	..... .....	..... .....	..... .....
2	Ohio.....	E. Combs (Acct. 1), No. 7..	532	Bridgeport-1..... Bridgeport-3.....	915 1,060	20 8	283 528	1,217 972	820 1,062	..... 30	..... Salt water, 1,068 feet.	..... .....	..... .....
3	Ohio.....	E. Combs (Acct. 1), No. 2..	537	Bridgeport-1.....	830	25	293	1,207	830	10	.....	.....	.....
4	Ohio.....	E. Combs (Acct. 2), No. 5..	537	Bridgeport-2.....	992	11	455	1,045	.....	.....	No record.....	.....	.....
5	Ohio.....	E. Combs (Acct. 2), No. 8..	522	Kirkwood.....	1,412	44	890	610	1,414	250	.....	.....	.....
6	Ohio.....	E. Combs (Acct. 2), No. 4..	521	Bridgeport-1..... Bridgeport-3.....	854 1,037	18 20	333 516	1,167 984	860 .....	..... 75	..... Salt water, 1,080 feet.	..... .....	..... .....
7	Ohio.....	E. Combs (Acct. 2), No. 10.	521	Kirkwood..... McClosky.....	1,420 1,643	35 11	899 1,122	601 378	..... 1,656	Gas .....	..... Gas, 1,643 feet. 1,000,000 cu. ft. gas first day.....	..... .....	..... .....
8	Ohio.....	E. Combs (Acct. 2), No. 3..	526	Bridgeport-1..... Bridgeport-3.....	842 1,037	18 20	316 511	1,184 989	850 1,047	..... 100	..... .....	..... .....	..... .....
9	Ohio.....	E. Combs (Acct. 2), No. 1..	523	Bridgeport-1..... Bridgeport-3.....	835 1,021	20 41	312 498	1,188 1,002	..... 1,056	..... 50	..... Salt water, 1,063 feet.	..... .....	..... .....
10	Ohio.....	E. Combs (Acct. 2), No. 9..	522	Kirkwood.....	1,395	25	863	637	1,391	50	.....	.....	.....
11	Ohio.....	E. Combs (Acct. 2), No. 6..	516	Bridgeport-1..... Bridgeport-3.....	824 1,038	20 20	308 522	1,192 978	830 1,050	40	.....	.....	.....
12	Int'l Oil & Gas Co.....	E. Fyffe, No. 6.....	526	"Gas"..... Kirkwood.....	1,335 1,396	..... 48	809 870	691 630	..... 1,410	..... 1,430	..... Gas, 1,335 feet.	..... .....	..... .....
13	Int'l Oil & Gas Co.....	E. Fyffe, No. 1.....	526	Bridgeport..... Kirkwood.....	825 1,396	140 48	299 870	1,201 630	..... .....	..... 30	..... Gas, 1,335 feet.	..... .....	..... .....
14	Int'l Oil & Gas Co.....	E. Fyffe, No. 3.....	527	Bridgeport-1..... Bridgeport-2..... Bridgeport-3.....	832 902 964	23 46 38	305 375 437	1,195 1,125 1,063	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....
15	Int'l Oil & Gas Co.....	E. Fyffe, No. 12.....	521	Bridgeport..... do..... Buchanan..... Kirkwood..... McClosky.....	740 840 1,100 1,425 1,660	40 72 125 50 .....	219 319 579 904 1,139	1,281 1,181 921 596 361	..... ..... ..... 1,665 .....	..... ..... ..... 1,665 .....	..... ..... Salt water, 1,115 feet. ..... Gas, 1,660 feet.....	..... ..... ..... ..... .....	..... ..... ..... ..... .....
16	Int'l Oil & Gas Co.....	E. Fyffe, No. 4.....	521	Bridgeport-1..... Bridgeport-3..... Kirkwood.....	850 972 1,395	110 38 58	329 451 874	1,171 1,049 626	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... Salt water, 745 feet.	..... ..... .....
17	Int'l Oil & Gas Co.....	E. Fyffe, No. 11.....	507	Bridgeport..... do..... Buchanan..... Kirkwood..... Tracey..... McClosky.....	735 835 1,085 1,431 1,580 1,659	60 70 135 38 .....	228 328 578 924 1,073 1,152	1,272 1,172 922 576 427 348	..... ..... ..... ..... ..... 1,666	..... ..... ..... ..... ..... 1,672	..... ..... ..... ..... ..... Gas, 1,659 feet.....	..... ..... ..... ..... ..... .....	..... ..... ..... ..... ..... .....



[illegible]

## Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
31— N. E.	40	Ohio.....	McCleave, No. 4.....	518	Kirkwood.....	1,492	47	974	528	1,500	150	Gas, 1,720 feet.....
	41	Ohio.....	McCleave, No. 3.....	528	McClosky.....	1,721	5	1,203	297	1,731	100	.....
	42	Ohio.....	McCleave, No. 5.....	536	Kirkwood.....	1,467	52	939	561	1,490	.....	.....
	43	Ohio.....	McCleave, No. 1.....	534	McClosky.....	1,698	10	1,170	330	1,732	125	.....
	44	Ohio.....	McCleave, No. 2.....	534	Kirkwood.....	1,462	42	926	574	1,463	100	Well abandoned.....
	45	Ohio.....	Clark, No. 11.....	534	Bridgeport-2.....	867	8	333	1,167	867	.....	do.....
	46	Ohio.....	Clark, No. 4.....	533	Bridgeport-3.....	1,073	6	539	961	.....	500	Gas, 1,691 feet.....
	47	Ohio.....	Clark, No. 12.....	531	Kirkwood.....	1,459	44	925	575	1,701	125	Gas, 1,670 feet.....
	48	Ohio.....	Clark, No. 17.....	529	McClosky.....	1,691	10	1,157	343	1,465	.....	Well abandoned.....
	49	Ohio.....	Clark, No. 8.....	528	Kirkwood.....	1,447	45	913	587	1,675	150	.....
	50	Ohio.....	Clark, No. 18.....	520	McClosky.....	1,675	13	1,141	359	.....	.....	.....
	51	Ohio.....	Clark, No. 7.....	523	Bridgeport.....	940	17	407	1,093	1,043	.....	Well abandoned.....
	52	Ohio.....	Clark, No. 9.....	522	do.....	1,024	11	491	1,009	1,502	.....	.....
	53	Ohio.....	Clark, No. 6.....	526	Kirkwood.....	1,445	42	914	586	1,447	.....	.....
	54	Ohio.....	Clark, No. 5.....	522	Bridgeport.....	990	60	461	1,039	.....	.....	.....
					Kirkwood.....	1,442	31	913	587	1,670	Gas	Gas, 1,660 feet.....
					McClosky.....	1,660	10	1,131	369	.....	.....	.....
					Bridgeport.....	830	12	304	1,196	.....	.....	.....
					do.....	1,040	10	514	986	.....	.....	.....
					Kirkwood.....	1,404	.....	878	622	1,414	.....	.....
					do.....	1,424	39	904	596	.....	Gas	.....
					McClosky.....	1,664	10	1,134	366	1,665	.....	.....
					Bridgeport.....	820	25	298	1,202	.....	.....	.....
					do.....	1,054	6	532	968	1,062	.....	.....
					Kirkwood.....	1,404	.....	882	618	1,414	.....	.....
					Bridgeport-1.....	830	15	304	1,196	1,430	.....	.....
					Bridgeport-2.....	934	10	406	1,092	.....	.....	.....
					Bridgeport-3.....	1,010	41	484	1,016	1,051	.....	.....
					Bridgeport-1.....	806	16	283	1,217	.....	.....	.....
					Bridgeport-2.....	995	12	373	1,127	.....	.....	.....
					Bridgeport-3.....	996	55	473	1,027	1,046	.....	.....





17	Snowden Bros.	Perkins, No 23.	486	Bridgeport.	778	20	292	1,208	780	Show	
				do.	830	68	344	1,156	885		Salt water, 1,080 feet.
				do.	915	60	429	1,071			Some gas, 1,012 feet.
				do.	1,000	80	514	986	1,029		Salt water, 1,147 feet.
				Buchanan	1,090	57	604	896			
				"Gas"	1,265	13	779	721			
				Kirkwood.	1,340	50	834	646	1,355		Gas, 1,355 feet.
				Bridgeport.	810	10	324	1,176			
18	Snowden Bros.	Perkins, No 11.	486	do.	875	28	389	1,111			
				do.	1,055	19	519	981		150	
				do.	828	22	340	1,160			
				do.	870	30	382	1,118			
19	Snowden Bros.	Perkins, No 22.	488	do.	985	28	497	1,003			
				do.	790	8	279	1,221	1,013		
				do.	882	20	371	1,129			
				do.	1,015	15	504	996		Show	Salt water, 1,086 feet.
20	Snowden Bros.	Perkins, No 26.	511	do.	1,035	51	524	976	1,030		
				Stray.	1,110	15	599	901			
				Kirkwood-1.	1,362	32	851	649	1,377		
				Kirkwood-2.	1,467	28	956	544	1,472		
				Bridgeport.	810	20	299	1,201	1,511		
21	Snowden Bros.	Perkins, No 5.	511	do.	905	10	394	1,106			
				do.	1,017	5	506	994		75	
				do.	810	10	299	1,201			
				do.	880	126	369	1,131			
22	Snowden Bros.	Perkins, No 6.	511	do.	1,013	2	502	998		75	
				Buchanan	1,794	26	283	1,217			
				Bridgeport.	890	25	379	1,121			
				do.	992	21	481	1,019	890		
				do.	1,024	66	513	987			
23	Snowden Bros.	Perkins, No 28.	511	do.	1,321	9	810	690			Gas, 1,322 feet.
				"Gas"	1,364	22	853	647	1,368		
				Kirkwood-1.	1,400	12	889	611			
				Kirkwood-2.	1,462	28	951	549	1,465		
				Tracey.	798	10	298	1,202			
				Bridgeport.	871	15	371	1,129			
24	Snowden Bros.	Perkins, No 12.	500	do.	977	39	477	1,023		125	
				do.	770	25	270	1,230	775	Show	
				do.	840	10	340	1,160			
				do.	870	13	370	1,130			
				do.	910	10	410	1,090			
				do.	962	100	462	1,038	975		Salt water, 993, 1,016 and 1,040 feet.
25	Snowden Bros.	Perkins, No 27.	500	Stray.	1,108	8	608	892			
				"Gas"	1,258	4	758	742			Gas, 1,260 feet.
				Kirkwood.	1,355	15	855	645			
				Stray.	1,490	7	990	510			Gas, 1,490 feet.
				Tracey-1.	1,500	10	1,000	500			
				Tracey-2.	1,523	8	1,023	477	1,531		Gas, 1,523 feet.



## Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
31— S. W.  S. E.	16	Ohio.....	Kimmel, No. 15.....	539	Kirkwood.....	1,550	38	1,011	489	1,552	1,597	75	Gas, 1,555 feet.....
	17	Ohio.....	Kimmel, No. 18.....	537	do.....	1,555	31	1,018	482	1,558	1,586	75	.....
	18	Ohio.....	Kimmel, No. 9.....	544	do.....	1,543	20	999	501	1,545	1,569	25	.....
	1	Ohio.....	S. Abernathy, No. 3.....	550	Kirkwood-1.....	1,545	12	995	505	1,551	1,586	25	.....
	2	McAuliff.....	Cullison, Lot No. 1.....	552	Kirkwood-2.....	1,563	16	1,013	487	.....	.....	.....	No record.....
	3	Ohio.....	Kimmel, No. 10.....	556	Kirkwood.....	1,522	38	966	534	1,540	1,567	25	.....
	4	Ohio.....	E. Combs, No. 5.....	561	"Gas".....	1,410	(?) 100	849	651	1,528	1,528	50	.....
	5	Ohio.....	E. Combs, No. 4.....	546	Bridgeport.....	860	20	314	1,186	860	.....	25	.....
	6	Ohio.....	E. Combs, No. 2.....	546	Kirkwood.....	1,458	5	912	588	1,458	.....	.....	.....
	7	Ohio.....	E. Combs, No. 7.....	546	Bridgeport.....	995	15	449	1,051	1,000	.....	.....	Gas, 1,375 feet.....
	8	D. Quinlan.....	A. Combs, No. 1.....	525	"Gas".....	1,375	11	829	671	.....	.....	Gas	.....
	9	D. Quinlan.....	A. Combs, No. 3.....	525	McClosky-1.....	1,682	6	1,136	364	.....	.....	.....	.....
	10	D. Quinlan.....	A. Combs, No. 2.....	521	McClosky-2.....	1,699	9	1,153	347	1,699	1,717	300	No record.....
	11	Ohio.....	E. Combs, No. 8.....	520	.....	.....	.....	.....	.....	.....	.....	.....	do.....
	12	Ohio.....	E. Combs, No. 3.....	526	McClosky-1.....	1,642	4	1,122	378	.....	.....	Gas	.....
	13	Ohio.....	E. Combs, No. 6.....	525	McClosky-2.....	1,660	4	1,140	360	.....	1,664	.....	Gas, 1,340 feet.....
	14	Ohio.....	E. Combs, No. 1.....	526	"Gas".....	1,340	10	814	686	.....	.....	17	.....
	15	Ohio.....	E. Combs, No. 9.....	536	Kirkwood.....	1,440	10	914	586	1,440	.....	140	Gas, 1,340 feet.....
	16	Ohio.....	Kimmel, No. 16.....	534	Kirkwood-1.....	1,439	9	914	586	1,439	1,533	.....	Gas, 1,355 feet.....
	17	Ohio.....	Kimmel, No. 13.....	525	Kirkwood-2.....	1,453	11	928	572	.....	1,370	Gas	.....
					"Gas".....	1,345	25	819	681	.....	.....	75	Gas, 1,685 feet.....
					Kirkwood.....	1,450	42	914	586	1,680	1,700	.....	.....
					McClosky-2.....	1,685	10	1,149	351	.....	.....	.....	.....
					Kirkwood-1.....	1,450	25	916	584	.....	.....	.....	.....
					Kirkwood-2.....	1,480	20	946	554	.....	.....	.....	.....
					McClosky.....	1,682	10	1,148	352	1,683	1,692	60	Gas, 1,680 feet.....
					Kirkwood-1.....	1,418	12	893	607	1,420	.....	80	Gas, 1,418 feet.....
					Kirkwood-2.....	1,432	20	907	593	.....	1,452	.....	.....

3	Snowden Bros.	Perkins, No 2.	480	Bridgeport.	778	321	298	1,202				Slate, 796 to 800 feet.
				do.	869	11	389	1,110				
				do.	1,010	20	530	970		100		
				do.	780	25	300	1,207		Show		
				do.	855	40	375	1,125	860			
				do.	925	25	445	1,055	940			
4	Snowden Bros.	Perkins, No. 21.	480	do.	1,050	90	570	930				Salt water, 1,055 feet.
				"Gas"	1,264	6	784	716				Gas, 1,270 feet.
				Kirkwood-1	1,328	9	848	652				
				Kirkwood-2	1,339	51	859	641			1,408	
				Bridgeport.	1,785	15	306	1,194				
				do.	850	7	371	1,129				
				do.	875	15	396	1,104				
				do.	920	42	441	1,059	925			
				do.	1,020	85	541	959	1,045			Salt water, 1,050 and 1,075 feet.
5	Snowden Bros.	Perkins, No 17.	479	Buchanan-1.	1,108	28	629	871				
				Buchanan-2.	1,138	22	659	841				
				"Gas"	1,262	28	783	717				Gas, 1,267 feet.
				Kirkwood	1,350	45	871	629	1,351			
				Tracey-1.	1,450	10	971	523	1,461			
				Tracey-2.	1,475	26	996	504				Gas, 1,490 feet.
				Tracey-3.	1,570	25	1,091	409				Gas, 1,580 feet.
				McClosky.	1,640	25	1,161	339	1,665			
				Bridgeport.	817	8	337	1,163			1,714	
				do.	936	10	456	1,044				
6	Snowden Bros.	Perkins, No. 9.	480	do.	1,002	28	622	978				
				"Gas"	1,238	24	758	742				Gas, 1,238 feet.
										{	Gas	25,000,000 cu. ft. daily.
7	Snowden Bros.	Perkins, No. 1.	501	Bridgeport.	810	15	309	1,191	815			
				do.	932	103	431	1,089				
				do.	808	20	307	1,193		Show		
				do.	900	30	401	1,099				
				do.	1,030	90	631	969	1,030			Salt water, 1,045 feet.
8	Snowden Bros.	Perkins, No. 20.	499	"Gas"	1,285	20	786	714		Show		Gas, 1,280 feet.
				Kirkwood	1,372	20	873	627	1,375		Show	
				Tracey.	1,472	18	973	527	1,475			
				Bridgeport and Buchanan								Salt water, 1,070 feet.
				"Gas"	1,061	99	530	964				Gas, 1,325 feet.
				Kirkwood-1.	1,320	20	795	705				
				Kirkwood-2.	1,404	21	879	621	1,404			
				Tracey.	1,452	8	927	573				
					1,508	16	983	517	1,508		1,541	

## Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
32—												
N. E...	20	Ohio.....	Griggs, No. 19 .....	471 {	Bridgeport.....	810	110	339	1,161	810	.....	.....
N. W..	1	Ohio.....	R. Middaugh, No. 10 .....	524	do.....	944	60	473	1,027	944	.....	.....
	2	Ohio.....	R. Middaugh, No. 12 .....	519	Kirkwood.....	1,431	19	960	1,540	1,431	117	.....
	3	Ohio.....	R. Middaugh, No. 7 .....	526 {	do.....	1,364	39	840	660	1,364	80	.....
	4	Ohio.....	R. Middaugh, No. 16 .....	497	do.....	1,360	57	841	659	1,365	100	Gas, 1,380 feet.
	5	Ohio.....	R. Middaugh, No. 15 .....	495	Bridgeport.....	825	20	299	1,201	828	25	.....
	6	Ohio.....	R. Middaugh, No. 2 .....	518 {	do.....	1,033	15	507	993	.....	.....	.....
	7	Ohio.....	R. Middaugh, No. 8 .....	494	do.....	1,360	30	863	637	1,360	60	.....
	8	Ohio.....	R. Middaugh, No. 14 .....	496	Bridgeport.....	963	62	473	1,027	968	75	.....
	9	Ohio.....	R. Middaugh, No. 6 .....	495	do.....	825	.....	307	1,193	.....	.....	.....
	10	Ohio.....	R. Middaugh, No. 13 .....	486 {	do.....	1,055	.....	537	963	.....	.....	.....
	11	Ohio.....	R. Middaugh, No. 5 .....	485 {	do.....	800	3	306	1,194	800	.....	Gas, 911 feet.
	12	Ohio.....	R. Middaugh, No. 3 .....	483	do.....	911	27	417	1,083	911	120	Gas, 1,345 feet.
	13	Ohio.....	R. Middaugh, No. 4 .....	479	Kirkwood.....	1,347	33	851	649	1,350	100	Gas, 1,345 feet.
	14	Ohio.....	R. Middaugh, No. 9 .....	495	Bridgeport.....	800	15	305	1,195	810	60	.....
	15	Ohio.....	R. Middaugh, No. 1 .....	488 {	do.....	1,035	9	540	960	.....	.....	.....
	16	Ohio.....	R. Middaugh, No. 11 .....	493	Kirkwood.....	1,349	38	863	637	1,350	100	Gas, 1,352 feet.
					Bridgeport.....	788	27	303	1,197	788	70	.....
					do.....	1,014	24	529	971	.....	.....	.....
					do.....	782	39	299	1,201	794	80	.....
					do.....	904	.....	421	1,079	915	.....	.....
					do.....	777	20	298	1,202	.....	.....	.....
					do.....	904	13	425	1,075	908	80	.....
					Kirkwood.....	1,350	33	855	645	1,350	135	Gas, 1,360 feet.
					Bridgeport.....	795	17	307	1,193	.....	.....	.....
					do.....	919	4	431	1,069	.....	.....	.....
					Kirkwood.....	1,342	38	849	651	1,345	75	Gas, 1,350 feet.





No.	Owner	Perkins, No. 2.	Perkins, No. 21.	Perkins, No. 17.	Perkins, No. 9.	Perkins, No. 1.	Perkins, No. 20.	Perkins, No. 15.
3	Snowden Bros.	480	778	298	1,202	1,110	1,055	1,075
	Bridgeport.	1,010	869	389	1,110	1,055	1,055	1,055
	do.	1,780	1,010	530	1,010	1,010	1,010	1,010
	do.	855	1,780	300	1,207	1,207	1,207	1,207
	do.	925	855	375	1,125	1,125	1,125	1,125
	do.	1,050	925	445	1,055	1,055	1,055	1,055
	do.	1,284	1,050	570	1,030	1,030	1,030	1,030
	"Gas"	1,328	1,284	784	716	716	716	716
	Kirkwood-1.	1,339	1,328	848	652	652	652	652
	Kirkwood-2.	1,785	1,339	859	641	641	641	641
	Bridgeport.	850	1,785	306	1,194	1,194	1,194	1,194
	do.	875	850	371	1,129	1,129	1,129	1,129
	do.	920	875	396	1,104	1,104	1,104	1,104
	do.	1,020	920	441	1,059	1,059	1,059	1,059
	do.	1,108	1,020	541	959	959	959	959
	Buchanan-1.	1,138	1,108	629	871	871	871	871
	Buchanan-2.	1,262	1,138	659	841	841	841	841
	"Gas"	1,350	1,262	783	717	717	717	717
	Kirkwood.	1,450	1,350	871	629	629	629	629
	Tracey-1.	1,475	1,450	971	529	529	529	529
	Tracey-2.	1,570	1,475	996	504	504	504	504
	Tracey-3.	1,640	1,570	1,091	409	409	409	409
	McClosky.	817	1,640	1,161	339	339	339	339
	Bridgeport.	936	817	337	1,163	1,163	1,163	1,163
	do.	1,002	936	456	1,044	1,044	1,044	1,044
	do.	1,233	1,002	522	978	978	978	978
	"Gas"	810	1,233	758	742	742	742	742
	Bridgeport.	932	810	309	1,191	1,191	1,191	1,191
	do.	808	932	431	1,069	1,069	1,069	1,069
	do.	900	808	307	1,193	1,193	1,193	1,193
	do.	1,030	900	401	1,099	1,099	1,099	1,099
	do.	1,285	1,030	531	969	969	969	969
	"Gas"	1,372	1,285	786	714	714	714	714
	Kirkwood.	1,472	1,372	873	627	627	627	627
	Tracey.	964	1,472	973	527	527	527	527
	Bridgeport and Buchanan.	1,320	964	530	964	964	964	964
	"Gas"	1,404	1,320	796	705	705	705	705
	Kirkwood-1.	1,452	1,404	879	621	621	621	621
	Kirkwood-2.	1,508	1,452	927	573	573	573	573
	Tracey.	1,508	1,508	983	517	517	517	517

## Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
32—  S. W..	10	Snowden Bros.....	Perkins, No. 29.....	498	Bridgeport.....	760	15	262	1,238	.....	.....	.....
					do.....	815	10	317	1,183	.....	.....	.....
					do.....	945	50	447	1,053	951	Show	.....
					Bridgeport and Buchanan.....	1,040	80	542	938	.....	.....	Salt water, 1,050 feet.....
					"Gas".....	1,295	15	797	703	.....	.....	Gas, 1,300 feet.....
					Kirkwood-1.....	1,386	18	888	612	.....	.....	.....
	11	Snowden Bros.....	Perkins, No. 4.....	498	Kirkwood-2.....	1,408	8	910	590	1,410	.....	.....
					McClosky.....	1,585	64	1,087	413	1,649	Gas	Gas, 1,596, 1,613 and 1,628 feet.....
					Bridgeport.....	817	20	319	1,181	.....	.....	.....
					do.....	911	19	413	1,087	.....	.....	.....
					do.....	1,043	7	545	955	.....	10	Well abandoned.....
					do.....	808	10	314	1,186	.....	.....	.....
S. W..	12	Snowden Bros.....	Perkins, No. 7.....	494	do.....	898	137	404	1,096	.....	.....	.....
					do.....	720	5	226	1,274	.....	.....	.....
					do.....	800	26	306	1,194	805	Show	.....
					do.....	840	75	346	1,154	840	.....	Salt water, 880 feet.....
					Bridgeport and Buchanan.....	1,060	90	566	934	.....	.....	Hole full of water.....
					"Gas".....	1,280	20	786	714	.....	.....	Gas, 1,285 feet.....
	13	Snowden Bros.....	Perkins, No. 16.....	494	Kirkwood-1.....	1,356	54	862	638	1,378	.....	.....
					Kirkwood-2.....	1,443	17	949	551	1,445	100	.....
					Tracey.....	1,479	14	985	515	.....	.....	.....
					Bridgeport.....	940	60	412	1,088	1,508	.....	.....
					"Gas".....	1,338	23	810	690	.....	.....	Gas, 1,338 feet.....
					Kirkwood.....	1,428	13	900	600	1,445	60	.....
S. W..	14	Snowden Bros.....	Perkins, No. 10.....	528	Bridgeport.....	940	60	412	1,088	.....	.....	.....
					"Gas".....	1,338	23	810	690	.....	.....	Gas, 1,338 feet.....
					Kirkwood.....	1,428	13	900	600	1,445	60	.....
					Bridgeport.....	940	60	412	1,088	.....	.....	.....
					"Gas".....	1,338	23	810	690	.....	.....	Gas, 1,338 feet.....
					Kirkwood.....	1,428	13	900	600	1,445	60	.....

[illegible]



Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
32—  S. W..	26	M. Murphy	Stoltz Hrs., No. 8.	501	Bridgeport.....	840	76	339	1, 161	.....	.....	Salt water, 1,090 feet.....
					do.....	1, 060	30	559	941	.....	.....	Gas, 1,303 feet.....
					Stray.....	1, 298	5	797	703	.....	.....	.....
					"Gas".....	1, 318	16	817	683	1, 334	.....	.....
	27	M. Murphy	Stoltz Hrs., No. 2.	500	Kirkwood.....	1, 386	20	885	615	1, 406	1, 426	.....
					Bridgeport.....	800	8	300	1, 200	.....	.....	.....
					do.....	845	18	345	1, 155	863	.....	.....
					do.....	876	40	376	1, 124	916	.....	.....
	28	M. Murphy	Stoltz Hrs., No. 3.	506	do.....	1, 002	25	502	998	1, 027	1, 027	.....
					do.....	791	19	285	1, 215	.....	.....	.....
					do.....	810	41	304	1, 196	810	.....	.....
					do.....	824	15	318	1, 182	.....	.....	.....
	29	M. Murphy	Stoltz Hrs., No. 7.	508	do.....	852	7	346	1, 154	.....	.....	.....
					do.....	864	10	358	1, 142	864	.....	.....
					do.....	892	31	386	1, 114	892	933	.....
					do.....	792	268	284	1, 216	1, 060	.....	.....
	30	M. Murphy	Stoltz Hrs., No. 4.	503	"Gas".....	1, 297	16	789	711	.....	.....	Gas, 1,313 feet.....
					Kirkwood.....	1, 380	21	872	628	1, 391	1, 401	.....
					Bridgeport.....	792	20	289	1, 211	.....	.....	.....
					do.....	886	34	383	1, 117	.....	.....	.....
	31	M. Murphy	Stoltz Hrs., No. 5.	491	do.....	982	34	479	1, 021	.....	.....	.....
					do.....	1, 027	9	524	976	.....	1, 036	.....
					do.....	772	23	281	1, 219	785	.....	.....
					do.....	862	34	371	1, 129	.....	.....	.....
	32	M. Murphy	Stoltz Hrs., No. 9.	493	do.....	982	6	491	1, 009	.....	.....	.....
					do.....	1, 005	6	514	986	1, 011	1, 019	.....
					do.....	860	40	367	1, 133	890	.....	.....
					do.....	1, 000	19	507	983	.....	.....	.....
					"Gas".....	1, 285	1	792	708	.....	.....	.....
					Kirkwood-1.....	1, 347	13	854	646	1, 347	.....	Gas, 1,286 feet.....
					Kirkwood-2.....	1, 362	9	869	631	1, 371	1, 408	.....

33	M. Murphy	Stoltz Hrs., No. 6.	478	Bridgeport.	774	15	296	1,204	774	1,034	20		
	..do.			..do.	852	30	374	1,126	852				
	..do.			..do.	1,016	18	538	1,962	1,032	1,034			
	..do.			..do.	1,795	237	315	1,185	1,032				
34	M. Murphy	Stoltz Hrs., No. 10.	480	"Gas"	1,256	17	776	724					Gas, 1,273 feet.
	..do.			Kirkwood-1	1,346	23	866	634	1,364				
	..do.			Kirkwood-2	1,376	6	896	604	1,382				
	Bridgeport.			..do.	1,785	10	305	1,195	795				
35	M. Murphy	Stoltz Hrs., No. 1.	480	..do.	868	20	388	1,112					
	..do.			..do.	921	14	441	1,059					
	..do.			..do.	1,015	15	535	965					Well abandoned.
36	M. Murphy	Stoltz Hrs., No. 11.	480	Kirkwood.	1,337	53	857	643		1,030			
37	Ohio	J. Middaugh, No. 6.	481	Bridgeport.	1,780	15	299	1,201	780	1,390			
	..do.			..do.	1,048	6	567	933	1,050		20		
38	Ohio	J. Middaugh, No. 8.	477	..do.	777	20	300	1,200	780				
	..do.			..do.	900	21	423	1,077	905		40		
39	Ohio	J. Middaugh, No. 14.	472	Kirkwood-1	1,335	29	863	637	1,356				
	..do.			Kirkwood-2	1,370	16	898	602	1,375	1,388			
40	Ohio	J. Middaugh, No. 9.	471	Bridgeport.	775	22	304	1,196	782				
	..do.			..do.	838	15	467	1,033	943		40		
41	Ohio	J. Middaugh, No. 4.	466	..do.	779	25	313	1,187	789				
	..do.			..do.	917	33	451	1,049	917		80		
42	Ohio	J. Middaugh, No. 13.	494	Kirkwood.	1,349	33	855	645	1,360	1,386			
43	Ohio	J. Middaugh, No. 2.	501	Bridgeport.	798	12	297	1,203					Gas, 806 feet.
	..do.			..do.	858	23	357	1,143	860		60		
44	Ohio	J. Middaugh, No. 5.	501	..do.	790	30	289	1,211	795		90		
	..do.			..do.	990	27	489	1,011					
45	Ohio	J. Middaugh, No. 10.	479	..do.	792	27	313	1,187	800				
	..do.			..do.	954	7	475	1,025	960				
46	Ohio	J. Middaugh, No. 12.	492	..do.	853	57	361	1,139	853				
	..do.			..do.	788	27	301	1,199	800				
47	Ohio	J. Middaugh, No. 3.	487	..do.	983	29	496	1,004	983		80		
	..do.			..do.	917	23	430	1,070					
48	Ohio	J. Middaugh, No. 11.	487	Kirkwood-1	1,398	2	896	604	1,398				
	..do.			Kirkwood-2	1,416	6	914	596	1,420	1,428			
49	Ohio	J. Middaugh, No. 15.	502	Bridgeport.	852	58	350	1,150	874				Slate, 870 to 874 feet.
50	Ohio	J. Middaugh, No. 1.	502	..do.	795	18	291	1,209	800				
51	Ohio	J. Middaugh, No. 7.	504	..do.	1,006	30	501	999	1,010		500		
	..do.			..do.	780	18	299	1,201	785				
1	Ohio	Johnson, No. 4.	481	..do.	990	25	509	991	1,010		1,000		
	..do.			..do.	820	10	350	1,150	820				
2	Ohio	Johnson, No. 7.	470	..do.	856	18	386	1,114	856				Gas, 895 feet.
	..do.			..do.	965	22	495	1,005	965		110		
3	Ohio	Johnson, No. 6.	465	..do.	825	42	360	1,140	852				
	..do.			..do.	955	15	490	1,010	955		105		Gas, 920 feet.
	..do.			Kirkwood.	1,360	5	895	605					
4	Ohio	Johnson, No. 8.	463	Bridgeport.	857	18	394	1,106	857				
	..do.			..do.	940	28	477	1,023					Gas, 920 feet.
5	Ohio	Johnson, No. 9.	465	..do.	861	21	396	1,104	861		75		
6	Ohio	Johnson, No. 10.	464	..do.	850	38	386	1,114	870		70		
	..do.			..do.	777	21	305	1,195	777		80		Gas, 850 feet.
7	Ohio	Johnson, No. 11.	472	..do.	870	20	398	1,102	870		55		
	..do.			..do.						893			

Lawrence County—Bridgeport Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
32—S. E....	8	Ohio.....	Johnson, No. 5.....	470	Bridgeport.....	780	15	310	1,190	785	.....	.....
	9	Ohio.....	Johnson, No. 1.....	472	do.....	939	27	469	1,031	940	100	.....
	10	Ohio.....	Johnson, No. 2.....	461	do.....	782	18	310	1,190	785	.....	.....
	11	Ohio.....	Johnson, No. 3.....	462	do.....	890	10	418	1,082	895	50	.....
	12	Ohio.....	Griggs, No. 14.....	458	do.....	865	21	404	1,096	.....	.....	.....
	13	Ohio.....	Griggs, No. 20.....	457	do.....	925	25	464	1,036	930	75	.....
	14	Ohio.....	Griggs, No. 11.....	461	do.....	775	21	313	1,187	780	90	.....
	15	Ohio.....	Griggs, No. 21.....	458	do.....	927	18	465	1,035	.....	.....	.....
	16	Ohio.....	Griggs, No. 27.....	473	Kirkwood-1.....	1,417	3	959	541	.....	.....	.....
	17	Ohio.....	Griggs, No. 22.....	463	Kirkwood-2.....	1,457	7	999	501	1,450	50	.....
	18	Ohio.....	Griggs, No. 17.....	468	Kirkwood-1.....	1,431	7	974	526	1,431	.....	.....
	19	Ohio.....	Griggs, No. 23.....	467	Kirkwood-2.....	1,464	8	1,007	493	1,464	40	.....
	20	Ohio.....	Griggs, No. 10.....	465	Kirkwood.....	1,445	.....	894	516	1,448	100	.....
	21	Ohio.....	Griggs, No. 24.....	474	Bridgeport.....	867	23	409	1,091	867	50	.....
	1	Bridgeport.....	Stoltz, No. 2.....	498	do.....	910	17	452	1,048	.....	.....	.....
30—N. E....	1	Bridgeport.....	Stoltz, No. 2.....	498	"Gas".....	1,358	24	885	615	1,358	.....	Gas, 1,358 feet.
	2	Bridgeport.....	Stoltz, No. 2.....	498	Kirkwood.....	1,432	26	959	541	1,437	100	.....
	3	Bridgeport.....	Stoltz, No. 2.....	498	Bridgeport.....	861	42	398	1,102	861	65	Gas, 916 feet.
30—N. E....	4	Bridgeport.....	Stoltz, No. 2.....	498	do.....	916	3	453	1,047	.....	.....	.....
	5	Bridgeport.....	Stoltz, No. 2.....	498	do.....	881	13	413	1,087	881	170	.....
	6	Bridgeport.....	Stoltz, No. 2.....	498	do.....	786	125	319	1,181	790	85	Gas, 872 feet.
30—N. E....	7	Bridgeport.....	Stoltz, No. 2.....	498	Kirkwood.....	1,432	37	967	533	890	200	.....
	8	Bridgeport.....	Stoltz, No. 2.....	498	Bridgeport.....	898	22	424	1,076	1,432	80	.....
	9	Bridgeport.....	Stoltz, No. 2.....	498	Kirkwood.....	1,558	30	1,060	440	1,560	1,589	.....

2 Bridgeport...	Stoltz, No. 12.	508	700	304	192	1,305	.....	.....	.....	Salt water, 715 feet.
		745	35	237	1,203	.....	.....	.....	.....	Salt water, 780 feet.
		826	55	317	1,153	.....	.....	.....	.....	.....
		1,040	20	532	968	.....	.....	.....	.....	.....
		1,318	39	810	690	.....	.....	.....	.....	.....
		1,435	10	977	523	.....	.....	.....	.....	.....
		1,554	39	1,046	454	1,572	1,609	.....	.....	Salt water.
		988	12	358	1,142	.....	.....	.....	.....	.....
		900	12	390	1,110	.....	.....	.....	.....	.....
		1,114	211	604	896	.....	.....	.....	.....	Salt water, 1,204 and 1,279 feet.
3 Bridgeport.....	Stoltz, No. 4.	510	1,248	40	838	662	.....	.....	.....	.....
		1,462	6	952	548	.....	.....	.....	.....	.....
		1,632	20	1,142	358	1,660	.....	.....	.....	.....
		830	40	326	1,174	.....	.....	.....	.....	.....
		1,040	112	538	964	.....	.....	.....	.....	Salt water.
4 Bridgeport ...	Stoltz, No. 6.	504	1,175	75	671	929	.....	.....	.....	do.
		1,250	168	746	754	.....	.....	.....	.....	do.
		1,480	10	976	524	.....	.....	.....	.....	Show Salt water, 1,340 feet.
		1,557	24	1,053	447	1,567	.....	.....	.....	.....
5 Bridgeport ...	Stoltz, No. 5.	461	1,590	48	1,002	401	1,567	.....	.....	.....
6 Bridgeport ...	Stoltz, No. 1.	483	1,455	10	997	503	.....	.....	.....	Show 50
7 Bridgeport.....	Stoltz, No. 8.	485	1,565	22	1,077	423	1,565	.....	.....	.....
		1,590	.....	1,105	395	1,003	1,618	.....	.....	Show 300
		820	35	331	1,069	.....	.....	.....	.....	.....
		1,050	165	561	839	.....	.....	.....	.....	Salt water.
8 Bridgeport.....	Stoltz, No. 3.	489	1,300	40	811	699	.....	.....	.....	Salt water, 1,195 feet.
		1,475	20	986	514	.....	.....	.....	.....	.....
		1,570	36	1,061	419	1,570	.....	.....	.....	Salt water.
		1,562	.....	1,046	454	.....	.....	.....	.....	.....
		1,616	60	1,100	400	1,635	1,691	.....	.....	.....
9 Bridgeport...	Stoltz, No. 11.	516	.....	.....	.....	.....	.....	.....	.....	No record.
10 Burton Bros.	Piper, No. 1.	492	.....	.....	.....	.....	.....	.....	.....	do.
11 Burton Bros.	Piper, No. 2.	509	.....	.....	.....	.....	.....	.....	.....	do.
12 Burton Bros.	Piper, No. 3.	534	.....	.....	.....	.....	.....	.....	.....	.....
1 Bridgeport.....	Stoltz, No. 10.	531	810	18	260	1,211	.....	.....	.....	.....
		889	50	359	1,141	.....	.....	.....	.....	.....
		1,160	125	639	961	.....	.....	.....	.....	.....
		1,520	15	1,090	431	.....	.....	.....	.....	Salt water.
		1,672	37	1,151	349	1,677	1,709	.....	.....	.....
		890	50	384	1,116	.....	.....	.....	.....	.....
		1,125	135	619	831	.....	.....	.....	.....	Salt water, 905 feet.
		1,265	40	779	731	.....	.....	.....	.....	Salt water, 1,180 feet.
		1,390	90	894	616	.....	.....	.....	.....	Salt water, 1,325 feet.
		1,532	7	1,095	474	.....	.....	.....	.....	Salt water, 1,435 feet.
2 Snowden Bros.	Fyfe, No. 9.	506	1,573	16	1,067	433	.....	.....	.....	.....
		1,642	57	1,136	364	1,651	1,717	.....	.....	Salt water, 1,589 feet.

S. E.

## Lawrence County—Bridgeport Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
36—  S. E....	3	Snowden Bros.....	Fyffe, No. 8.....	499	Bridgeport.....	855	37	356	1,144	.....	.....	Hole full of water, 885 feet.
					do.....	1,085	100	586	914	.....	.....	Hole full of water, 1,110 feet.
					do.....	1,275	25	776	724	.....	.....	.....
					Buchanan.....	1,345	65	846	654	.....	.....	.....
					"Gas".....	1,535	21	1,036	464	.....	.....	Salt water, 1,544 feet.
					Kirkwood.....	1,621	46	1,122	378	1,625	1,670	125
	4 5	Snowden Bros..... International Oil & Gas Co.....	Fyffe, No. 3..... C. Fyffe, No. 2.....	506 512	do.....	1,563	18	1,087	413	.....	.....	100
					do.....	1,594	24	1,082	418	.....	.....	125
					Bridgeport.....	1,125	75	609	891	.....	.....	.....
					do.....	1,222	35	706	794	.....	.....	.....
					do.....	1,300	25	784	716	.....	.....	.....
					Buchanan.....	1,410	25	894	606	.....	.....	.....
7	6	International Oil & Gas Co.....	C. Fyffe, No. 4.....	516	Stray.....	1,465	15	949	551	.....	.....	.....
					Kirkwood-1.....	1,645	22	1,129	371	.....	.....	.....
					Kirkwood-2.....	1,673	5	1,157	343	1,685	.....	Hole full of salt water, 1,135 feet.
					Bridgeport.....	1,120	90	594	906	.....	.....	.....
					.....	.....	.....	.....	.....	.....	.....	.....
					.....	.....	.....	.....	.....	.....	.....	.....
	7	International Oil & Gas Co.....	C. Fyffe, No. 5.....	526	Kirkwood-1.....	1,666	18	1,140	360	1,666	.....	.....
					Kirkwood-2.....	1,689	21	1,163	337	1,689	.....	.....
					Bridgeport.....	770	25	247	1,253	.....	.....	Salt water.
					do.....	850	85	327	1,173	.....	.....	Salt water, 935 feet.
					do.....	967	8	444	1,056	.....	.....	.....
					do.....	1,020	15	497	1,003	.....	.....	.....
8	8	Bridgeport.....	Stoltz, No. 13.....	523	do.....	1,146	99	623	877	.....	.....	Salt water.
					do.....	1,260	60	737	763	.....	.....	do.
					Buchanan.....	1,390	10	867	633	.....	.....	.....
					Stray.....	1,445	25	922	578	.....	.....	.....
					"Gas".....	1,595	10	1,073	428	.....	.....	Salt water.
					Kirkwood.....	1,670	31	1,150	311	1,689	1,734	.....

9	International Oil & Gas Co.	C. Fyffe, No. 8	531	Bridgeport..... do..... Buchanan..... "Gas"..... Kirkwood.....	875 1,100 1,420 1,550 1,623	70 141 28 28 12	244 579 890 1,019 1,092	1,150 921 811 481 408	1,635 1,698	Salt water, 884 feet. Salt water, 1,170 feet. Salt water, 1,430 feet. Salt water, 1,430 feet. Salt water.
10	International Oil & Gas Co.	C. Fyffe, No. 1	538	do.....	1,800	1,003	438			
11	International Oil & Gas Co.	C. Fyffe, No. 3	539	do.....	1,677	1,448	353	1,698	1,710	Salt water, 1,270 feet.
12	Bridgeport.....	Stolls, No. 9	536	Bridgeport..... Kirkwood.....	1,160 1,668	160 25	634 1,172	866 328	1,710	

## Lawrence County—Christy Township.

Section No.	Map No.	Name of oil company	Name of well.	Surface elevation—feet.	Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.	Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
10—N. E..	1	Home Oil & Gas Co.	Mathias, No. 1	470	Shallow..... Bridgeport.....	825 1,000	20	255 530	1,145 970				Salt water, 853 feet. Coal, 760 feet (lime cap)...
12—N. W..	1	Home Oil & Gas Co.	Saunders, No. 1		Shallow..... Stray.....	830 1,110	40					Show	Coal, 770 feet (lime cap)...
13—N. W..	1	Ohio.....	Neldaugh, No. 1	485	Bridgeport.....	1,330	130	835	865		1,526	Dry	Salt water, 1,400 feet. ....
36—			Candle, No. 1	503	do..... do..... Buchanan..... Stray..... Kirkwood.....	900 1,075 1,235 1,470 1,680	25 10 238 50 50	291 506 726 961 1,171	1,109 824 774 839 329				Salt water, 1,130 feet. ....

Lawrence County—Bridgeport Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
36—  S. E....		3 Snowden Bros.....	Fyffe, No. 8.....	499	Bridgeport.....	855	37	356	1, 144	.....	.....	Hole full of water, 885 feet.
					..do.....	1, 085	100	586	914	.....	.....	Hole full of water, 1,110 feet.....
					..do.....	1, 275	25	776	724	.....	.....	.....
					Buchanan.....	1, 345	65	846	654	.....	.....	.....
		4 Snowden Bros.....	Fyffe, No. 3.....	506	"Gas".....	1, 535	21	1, 036	464	.....	.....	Salt water, 1,544 feet.....
					Kirkwood.....	1, 621	46	1, 122	378	1, 625	125	.....
					..do.....	1, 583	18	1, 087	413	1, 670	100	.....
					..do.....	.....	.....	.....	.....	.....	.....	.....
		5 International Oil & Gas Co.....	C. Fyffe, No. 2.....	512	..do.....	1, 594	24	1, 082	418	.....	125	.....
					Bridgeport.....	1, 125	75	609	891	.....	.....	.....
					..do.....	1, 222	35	706	794	.....	.....	.....
					..do.....	1, 300	25	784	716	.....	.....	.....
		6 International Oil & Gas Co.....	C. Fyffe, No. 4.....	516	Buchanan.....	1, 410	25	894	606	.....	.....	.....
					Stray.....	1, 465	15	949	551	.....	.....	.....
					Kirkwood-1.....	1, 645	22	1, 129	371	.....	.....	.....
					Kirkwood-2.....	1, 673	5	1, 157	343	1, 685	.....	Hole full of salt water, 1,135 feet.....
		7 International Oil & Gas Co.....	C. Fyffe, No. 5.....	526	Bridgeport.....	1, 120	90	594	906	.....	.....	.....
					.....	.....	.....	.....	.....	.....	.....	.....
					.....	.....	.....	.....	.....	.....	.....	.....
					.....	.....	.....	.....	.....	.....	.....	.....
		8 Bridgeport.....	Stoltz, No. 13.....	523	Kirkwood-1.....	1, 666	18	1, 140	360	1, 666	Show	.....
					Kirkwood-2.....	1, 689	21	1, 163	337	1, 689	.....	.....
					Bridgeport.....	770	25	247	1, 253	.....	.....	Salt water.....
					..do.....	850	85	327	1, 173	.....	.....	Salt water, 935 feet.....
					..do.....	967	8	444	1, 056	.....	.....	.....
					..do.....	1, 020	15	497	1, 003	.....	.....	.....
					..do.....	1, 146	99	623	877	.....	.....	Salt water.....
					..do.....	1, 260	60	737	763	.....	.....	..do.....
		.....	.....	.....	Buchanan.....	1, 390	10	867	633	.....	.....	.....
					Stray.....	1, 445	25	922	578	.....	.....	.....
					"Gas".....	1, 595	10	1, 073	424	.....	.....	.....
					Kirkwood.....	1, 670	31	1, 150	314	1, 680	.....	Salt water.....

	9	International Oil & Gas Co.	C. Fyffe, No. 6.	531	Bridgeport..... ..do..... Buchanan..... "Gas"..... Kirkwood.....	875 1,100 1,420 1,550 1,623	70 141 28 25 12	344 579 889 1,019 1,092	1,156 921 611 481 408	..... ..... ..... ..... 1,635	..... ..... ..... ..... 1,668	..... ..... ..... ..... .....	Salt water, 894 feet..... Salt water, 1,170 feet..... Salt water, 1,430 feet..... ..... .....
	10	International Oil & Gas Co.	C. Fyffe, No. 1.	538	..do.....	1,600	.....	1,062	438	.....	.....	.....	Salt water.....
	11	International Oil & Gas Co.	C. Fyffe, No. 3.	529	..do.....	1,677	.....	1,148	352	1,686	1,710	.....	.....
	12	Bridgeport.....	Stoltz, No. 9.	528	Bridgeport..... Kirkwood.....	1,160 1,698	150 25	634 1,172	866 328	..... 1,710	.....	.....	Salt water, 1,270 feet.....

Lawrence County—Christy Township.

Section No.	Map No.	Name of oil company	Name of well.	Sur-face ele-va-tion—feet.	Sand					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
10—N. E..	1	Home Oil & Gas Co.	Mathias, No. 1.	470 {	Shallow..... Bridgeport.....	825 1,000	20	355 530	1,145 970	..... .....	..... .....	..... .....	Salt water, 852 feet..... Coal, 760 feet (lime cap).....
12—N. W..	1	Home Oil & Gas Co.	Saunders, No. 1.	..... {	Shallow..... Stray.....	830 1,110	40	.....	.....	..... .....	..... .....	Show	Coal, 770 feet (lime cap).....
13—N. W..	1	Ohio.....	Neldaugh, No. 1.	495	Bridgeport.....	1,330	130	835	665	.....	1,526	Dry	Salt water, 1,400 feet.....
36—N. W..	1	Everson.....	Candle, No. 1.	509 {	..do..... ..do..... Buchanan..... Stray..... Kirkwood.....	900 1,075 1,235 1,470 1,680	25 10 235 20 50	391 566 726 961 1,171	1,109 934 774 539 329	..... ..... ..... ..... .....	..... ..... ..... ..... 1,730	..... ..... ..... ..... .....	Salt water, 1,120 feet..... ..... ..... ..... .....



## Lawrence County—Dennison Township.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
1—N. E.	1	Wark.	Lingenfelter, No. 9.	439	Kirkwood-1.	1,571	10	1,134	366	.....	.....	Drilling.
	2	Wark.	Lingenfelter, No. 1.	437	Kirkwood-2.	1,612	10	1,175	325	.....	.....	Quit in hard sand.
	3	Wark.	Lingenfelter, No. 2.	438	Kirkwood-1.	1,545	20	1,107	393	.....	1,622	.....
	1	Wark.	Lingenfelter, No. 3.	445	Kirkwood-2.	1,591	10	1,153	347	.....	1,601	.....
N. W.					Kirkwood-1.	1,542	53	1,097	403	.....	.....	Salt water, 1,585 feet. Sand, white, broken.
	2	Wark.	Lingenfelter, No. 4.	445	Bridgeport.	934	18	489	1,011	.....	.....	.....
					Kirkwood-1.	1,533	32	1,088	411	.....	.....	.....
	3	Wark.	Lingenfelter, No. 5.	453	Kirkwood-2.	1,572	8	1,127	373	.....	1,580	.....
					Bridgeport.	937	13	484	1,016	.....	950	.....
					Kirkwood-1.	1,549	73	1,087	413	{ 1,558 1,605	.....	Hard white sand, 1,578 to 1,605 feet, 1,611 to 1,622 feet.
	4	Wark.	Lingenfelter, No. 6.	462	Stray.	1,654	23	1,192	308	1,662	.....	.....
					Tracey.	1,693	10	1,231	269	1,693	.....	.....
	5	Wark.	Lingenfelter, No. 7.	461	Kirkwood.	1,555	20	1,094	406	.....	1,705	Show
	6	Wark.	Lingenfelter, No. 8.	455	Tracey.	1,670	28	1,209	291	1,670	1,699	.....
					Kirkwood.	1,536	20	1,061	419	1,536	1,612	.....
	7	Central Refining Co.	Jenner, No. 9.	472	Bridgeport.	978	.....	506	994	.....	.....	Salt water, 1,045 feet.
					Kirkwood.	1,565	47	1,083	407	1,570	.....	.....
					Tracey.	1,670	16	1,198	302	.....	1,720	.....
	8	Central Refining Co.	Jenner, No. 6.	476	Bridgeport.	965	.....	489	1,011	.....	.....	Salt water, 1,005 feet.
					Kirkwood.	1,587	41	1,111	389	1,592	1,673	.....
	9	Central Refining Co.	Jenner, No. 4.	482	Bridgeport.	945	23	1,463	1,037	.....	986	.....
					Kirkwood-2.	1,610	25	1,133	367	.....	.....	.....
	10	Donnel, Agent	C. Buchanan, No. 5.	477	Tracey.	1,697	3	1,220	280	.....	.....	.....
					McClosky.	1,850	.....	1,373	127	.....	1,869	Salt water, 1,850 feet. Well abandoned.
	11	Donnel, Agent	C. Buchanan, No. 7.	475	Kirkwood-1.	1,540	.....	1,065	435	.....	2,005	Salt water, 1,440 and 1,450 feet. Well abandoned.

S. W.	12	Donnel, Agent	C. Buchanan, No. 9	440	Bridgeport	933	483	1,007	940	.....	Show	Gas, 940 feet. Salt water.
	1	Ohio	A. Buchanan, No. 1	479	Kirkwood-1	1,570	1,130	370	.....	.....	.....	1,000 feet
	2	Ohio	A. Buchanan, No. 12	467	Tracey	1,680	1,240	260	.....	2,017	.....	Salt water, 1,600 feet
	3	Ohio	A. Buchanan, No. 13	468	Bridgeport	960	1,481	1,019	963	.....	160	Well abandoned
	4	Ohio	E. J. Ridgely, No. 2	473	do	940	473	1,027	.....	973	.....	Gas, 962 feet
	5	Ohio	C. Gillespie, No. 1	473	Buchanan	1,300	833	667	.....	.....	.....	Salt water, 1,115 feet
	6	Ohio	Wm. Gillespie, No. 2	472	Kirkwood-2	1,602	1,135	365	.....	.....	.....	Salt water, 1,310 feet
	7	Ohio	Finley, No. 7	475	Tracey	1,709	1,242	258	.....	1,719	Gas	Salt water, 1,648 feet
	8	Associated Producers	Irish, No. 1	484	Bridgeport	795	327	1,173	795	803	250	Gas, 1,709 feet. 4,500,000 cu. ft. gas first day
	9	Associated Producers	Irish, No. 10	474	do	945	472	1,028	.....	.....	.....	Gas, 795 feet
	10	Associated Producers	Irish, No. 2	477	Buchanan	1,335	862	638	.....	.....	.....	.....
	11	Associated Producers	Irish, No. 3	499	Kirkwood	1,560	1,087	413	.....	.....	.....	.....
N. E.	1	Shaffer and Smathers	Finley, No. 3	487	Tracey	1,700	1,227	273	.....	.....	Dry	Salt water, 1,782 feet
	2	Shaffer and Smathers	Finley, No. 6	487	McClosky	1,775	1,302	198	.....	.....	.....	.....
	3	Shaffer and Smathers	Finley, No. 2	503	Bridgeport	975	502	998	.....	.....	.....	.....
	4	Shaffer and Smathers	Finley, No. 4	504	Buchanan	1,310	837	663	.....	.....	.....	.....
	5	Shaffer and Smathers	Finley, No. 5	507	Kirkwood-2	1,619	1,152	348	1,631	1,641	12	Salt water, 1,640 feet. Gas 1,625 feet
	6	Shaffer and Smathers	Finley, No. 1	496	Bridgeport	973	501	999	.....	.....	.....	.....
	7	Shaffer and Smathers	Finley, No. 3	487	Stray	1,120	648	852	.....	.....	.....	Salt water
	8	Associated Producers	Irish, No. 1	484	Buchanan	1,320	848	652	.....	.....	.....	do
	9	Associated Producers	Irish, No. 10	474	Kirkwood-1	1,565	1,083	407	.....	1,621	Gas	3,000,000 cu. ft. gas first day
	10	Associated Producers	Irish, No. 2	477	Bridgeport	949	475	1,025	1,582	.....	.....	.....
	11	Associated Producers	Irish, No. 3	499	Tracey	1,653	1,178	322	1,655	1,681	50	No record
	12	Associated Producers	Irish, No. 9	503	do	952	468	1,032	.....	.....	Dry	do

## Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
2-- N. E...	13	Ohio.....	L. Buchanan, No. 22.....	517	Bridgeport.....	992	32	475	1,025	.....	.....	Salt water, 1,028 to 1,155 feet.....
					Buchanan.....	1,290	190	773	727	.....	.....	Salt water, 1,315 feet.....
					Kirkwood.....	1,578	37	1,061	439	1,615	15	Gas, 1,590 feet.....
	14	Ohio.....	L. Buchanan, No. 23.....	508	Bridgeport.....	988	152	460	1,040	.....	.....	Salt water, 1,020 feet.....
					Buchanan.....	1,300	165	792	708	.....	.....	Salt water, 1,320 feet.....
	15	Ohio.....	L. Buchanan, No. 16.....	507	Kirkwood.....	1,595	25	1,087	413	1,620	50	Gas, 1,598 feet.....
	16	Ohio.....	L. Buchanan, No. 13.....	512	Bridgeport.....	935	60	428	1,072	936	125	Gas, 935 feet.....
	17	Ohio.....	L. Buchanan, No. 11.....	517	do.....	976	49	464	1,036	990	50	Gas, 980 feet.....
					do.....	979	41	462	1,038	990	100	Gas, 982 feet.....
	18	Ohio.....	L. Buchanan, No. 2.....	490	do.....	980	20	490	1,010	.....	.....	.....
					Kirkwood.....	1,592	38	1,102	398	1,630	125	Gas, 1,605 feet.....
	19	Ohio.....	L. Buchanan, No. 7.....	512	Bridgeport.....	966	40	454	1,046	1,006	150	Gas, 968 feet.....
	20	Ohio.....	L. Buchanan, No. 9.....	512	do.....	945	71	433	1,067	.....	.....	.....
					Kirkwood.....	1,588	65	1,076	424	1,653	Dry	Salt water, 1,592 feet.....
	21	Ohio.....	L. Buchanan, No. 6.....	503	Bridgeport.....	967	20	464	1,036	.....	.....	.....
					Kirkwood.....	1,590	51	1,087	413	1,641	150	.....
	22	Ohio.....	L. Buchanan, No. 8.....	518	Bridgeport.....	970	30	452	1,048	.....	.....	.....
					Kirkwood.....	1,600	41	1,082	418	1,641	30	Gas, 1,615 feet. Salt wa- ter, 1,641 feet.....
	23	Ohio.....	L. Buchanan, No. 10.....	522	Bridgeport.....	970	50	448	1,052	985	125	Gas, 972 feet.....
	24	Ohio.....	L. Buchanan, No. 4.....	509	do.....	960	27	451	1,049	987	90	.....
	25	Ohio.....	L. Buchanan, No. 1.....	493	do.....	961	23	468	1,032	984	100	Gas, 956 feet.....
					Bridgeport.....	933	57	436	1,064	.....	.....	.....
	26	Ohio.....	L. Buchanan, No. 25.....	497	do.....	1,020	80	523	977	.....	.....	Salt water.....
					Buchanan.....	1,300	182	803	697	.....	.....	Salt water, 1,315 feet.....
					Kirkwood.....	1,564	23	1,067	433	1,587	125	Gas, 1,565 feet.....
					Bridgeport.....	970	48	452	1,048	.....	.....	.....
	27	Ohio.....	L. Buchanan, No. 26.....	518	Buchanan.....	1,310	15	792	708	.....	.....	.....
					Kirkwood.....	1,688	30	1,070	430	1,618	75	Gas, 1,607 feet.....
	28	Ohio.....	L. Buchanan, No. 3.....	518	Bridgeport.....	970	45	452	1,048	1,015	175	Gas, 970 feet.....
	29	Ohio.....	L. Buchanan, No. 17.....	513	do.....	979	60	466	1,034	996	50	Gas, 994 feet.....

N. W.	30	Ohio.....	L. Buchanan, No. 5.....	513 {	do.....	970	70	457	1, 043	1, 609	1, 646	.....	Gas, 1,595 feet. Salt water, 1,646 feet. Well abandoned.....
	1	Ohio.....	Kerr, No. 19.....	510 {	Bridgeport.....	975	30	465	1, 035	.....	.....	.....	.....
	2	Ohio.....	Kerr, No. 1.....	509 {	Buchanan.....	1, 300	110	790	710	.....	.....	.....	.....
	3	Ohio.....	Kerr, No. 4.....	515 {	Kirkwood.....	1, 567	38	1, 057	443	1, 582	1, 605	150	Gas, 1,590 feet.....
	4	Ohio.....	Kerr, No. 10.....	517 {	Bridgeport.....	1, 955	47	446	1, 054	973	1, 002	.....	Gas, 980 feet.....
	5	Ohio.....	Kerr, No. 7.....	517 {	do.....	980	49	445	1, 055	975	.....	.....	Gas, 965 feet.....
	6	Ohio.....	Kerr, No. 9.....	515 {	Shallow.....	643	8	126	1, 374	.....	.....	.....	.....
	7	Ohio.....	Kerr, No. 13.....	517 {	Bridgeport.....	970	30	453	1, 047	977	1, 006	.....	.....
	8	Ohio.....	Kerr, No. 15.....	515 {	Kirkwood.....	1, 597	39	1, 060	420	1, 607	.....	.....	.....
	9	Ohio.....	Kerr, No. 17.....	512 {	Shallow.....	753	14	238	1, 262	.....	.....	.....	.....
	10	Ohio.....	Kerr, No. 18.....	512 {	Bridgeport.....	960	49	445	1, 055	.....	1, 009	.....	.....
	11	Ohio.....	Kerr, No. 16.....	512 {	do.....	972	.....	460	1, 040	978	1, 011	.....	.....
	12	Ohio.....	Kerr, No. 12.....	504 {	Shallow.....	649	25	454	1, 046	970	1, 000	.....	.....
	13	Ohio.....	Kerr, No. 24.....	500 {	Bridgeport.....	972	.....	137	1, 363	649	679	.....	.....
	14	Ohio.....	Kerr, No. 11.....	499 {	do.....	968	33	468	1, 032	972	980	.....	.....
	15	Ohio.....	Kerr, No. 8.....	494 {	.....	.....	.....	468	1, 032	.....	1, 001	.....	Drilling.....
	16	Ohio.....	Kerr, No. 6.....	494 {	Bridgeport.....	941	50	447	1, 053	.....	.....	.....	.....
	17	Ohio.....	Kerr, No. 23.....	505 {	Shallow.....	585	60	91	1, 409	.....	645	.....	.....
	18	Ohio.....	Kerr, No. 5.....	509 {	Bridgeport.....	910	87	405	1, 095	984	.....	.....	Drilling.....
	19	Ohio.....	Kerr, No. 21.....	515 {	Bridgeport.....	965	42	456	1, 044	974	.....	.....	.....
	20	Ohio.....	Kerr, No. 3.....	515 {	Stray.....	1, 260	.....	745	765	.....	.....	.....	.....
	21	Ohio.....	Kerr, No. 22.....	515 {	Buchanan.....	1, 308	.....	793	707	.....	.....	.....	.....
	22	Ohio.....	Kerr, No. 2.....	516 {	Kirkwood.....	1, 596	.....	1, 071	429	1, 586	1, 616	.....	.....
	23	Ohio.....	Kerr, No. 20.....	516 {	Bridgeport.....	1, 970	45	455	1, 045	986	1, 015	.....	.....
	24	Ohio.....	T. Gould, No. 20.....	514 {	Stray.....	1, 264	2	749	751	.....	.....	.....	Well abandoned.....
	25	Ohio.....	T. Gould, No. 7.....	516 {	Buchanan.....	1, 300	21	785	715	.....	1, 321	.....	.....
	26	Ohio.....	T. Gould, No. 8.....	510 {	Bridgeport.....	920	10	404	1, 096	982	1, 010	.....	Gas, 920 feet.....
	27	Ohio.....	T. Gould, No. 1.....	519 {	Kirkwood.....	1, 580	.....	1, 064	436	.....	1, 613	.....	.....
	28	Ohio.....	S. Gray, No. 2.....	491 {	Bridgeport.....	985	245	471	1, 029	.....	.....	.....	Salt water, 1,035 feet.....
	29	Ohio.....	S. Gray, No. 5.....	493 {	Buchanan.....	1, 305	145	791	709	.....	.....	.....	Salt water, 1,320 feet.....
	30	Ohio.....	S. Gray, No. 3.....	514 {	Kirkwood.....	1, 596	32	1, 072	426	1, 587	1, 608	100	Gas, 1,586 feet.....
	31	Ohio.....	S. Gray, No. 4.....	492 {	Bridgeport.....	988	42	472	1, 028	1, 003	1, 031	100	Gas, 990 feet.....
	32	Donnel, Agent.....	C. H. Buchanan, No. 3.....	493 {	do.....	978	32	468	1, 032	983	1, 010	125	Gas, 980 feet.....
	33	Donnel, Agent.....	C. H. Buchanan, No. 4.....	487 {	do.....	980	44	461	1, 039	986	1, 024	40	Gas, 980 feet.....
	34	Donnel, Agent.....	C. H. Buchanan, No. 2.....	491 {	do.....	957	29	466	1, 034	957	486	60	Gas, 957 feet.....
	35	Donnel, Agent.....	C. H. Buchanan, No. 1.....	491 {	do.....	952	.....	459	1, 041	956	984	200	.....
	36	Donnel, Agent.....	C. E. Buchanan, No. 1.....	473 {	do.....	965	28	451	1, 049	970	993	140	.....
	37	Donnel, Agent.....	C. E. Buchanan, No. 2.....	483 {	do.....	953	32	461	1, 039	955	985	175	.....

## Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
2—N. W.	38	Donnel, Agent.	E. Vandermark, No. 2.	470								Well abandoned.
	39	Donnel, Agent.	E. Vandermark, No. 1.	475								No record.
S. W.	40	Lantz.	A. Gray, No. 4.	483							15 200	Exhausted.
					Shallow.	635	25	152	1,348			
					Bridgeport.	989	30	486	1,014	992		
					Buchanan.	1,350	212	867	633			
					Kirkwood.	1,605		1,122	378			Red rock, 1,600 and 1,640 feet.
					Stray.	1,643		1,160	340	1,643	20	Salt water, 1,667 feet.
					McClosky.	1,902		1,419	81		Show	Salt water, 2,280 feet.
					Bridgeport.	956	40	490	1,010			
					Kirkwood.	1,604	38	1,138	1,029	2,028	Dry	Salt water, 2,012 feet.
					Bridgeport.	945		471	1,029	950		
S. E.	1	Ohio.	Clark, Acct. 2, No. 1.	466								
	2	Ohio.	Kerr, No. 14.	474								
	3	Mae.	Gillespie, No. 1.	465								
	4	Mae.	Gillespie, No. 3.	468								
	5	Mae.	Gillespie, No. 2.	469								
	6	Ohio.	Clark, Acct. 2, No. 4.	465								
	7	Ohio.	Clark, Acct. 2, No. 2.	462								
	1	Ohio.	L. Buchanan, No. 14.	468								
	2	Ohio.	L. Buchanan, No. 15.	477								
	3	Ohio.	L. Buchanan, No. 24.	489								
	4	Ohio.	A. Buchanan, No. 8.	503								
	5	Ohio.	A. Buchanan, No. 6.	505								
					Bridgeport.	1,300	22	—115	1,615			
					Shallow.	945	45	440	1,080	987	175	Gas, 966 feet.
					Stray.	686	15	194	1,306			
	6	Ohio.	A. Buchanan, No. 7.	491								
					Bridgeport.	790	10	299	1,201			
					Bridgeport.	948	22	457	1,043	965	150	Gas, 950 feet.

[illegible]

## Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
3—S. E.	2	Wheeler & James.	Leighty, No. 2.	462	Shallow.	500	20	46	1,454	500	.....	No record.
	3	Ohio.	Clark, No. 3.	454	Stray	750	50	296	1,204	.....	15	.....
5—N. W.	1	Ohio.	L. Jenner, No. 2.	410	Kirkwood.	1,557	44	1,147	353	1,602	Dry	.....
	2	Ohio.	L. Jenner, No. 1.	409	do.	1,540	39	1,131	369	1,579	65	Gas, 1,548 feet.
	3	Jennings.	A. Jordan, No. 1.	411	do.	1,548	19	1,137	363	1,554	.....	.....
	4	Ohio.	L. Jenner, No. 3.	408	Kirkwood-2.	1,604	.....	1,196	304	1,637	Dry	Salt water, 1,633 feet.
	1	Ohio.	E. Meagher, No. 1.	419	Kirkwood.	1,578	32	1,159	341	1,584	25	Gas, 1,580 feet. Salt water, 1,612 feet.
S. E.	1	Ohio.	Murphy, No. 1.	412	do.	1,541	.....	1,129	371	1,640	Dry	Salt water, 1,637 feet.
6—N. E.	1	Ohio.	Ackman, No. 3.	412	do.	1,537	43	1,125	375	1,612	20	Salt water, 1,598 feet.
	2	Ohio.	Ackman, No. 2.	409	do.	1,538	41	1,129	371	1,642	80	Gas, 1,542 feet.
	3	Ohio.	Shuey, No. 3.	410	do.	1,548	.....	1,138	362	1,549	30	.....
	4	Ohio.	Shuey, No. 4.	418	do.	1,532	51	1,164	336	1,612	Dry	Salt water, 1,631 feet.
N. W.	5	Ohio.	Shuey, No. 1.	410	do.	1,550	29	1,140	360	1,550	150	Gas, 1,550 feet.
	6	Ohio.	Ackman, No. 1.	412	do.	1,552	.....	1,140	360	1,552	75	Gas, 1,552 feet.
	7	Ohio.	Ackman, No. 5.	413	do.	1,532	38	1,119	381	1,548	130	Gas, 1,547 feet.
	8	Ohio.	Ackman, No. 4.	415	do.	1,537	43	1,122	378	1,572	20	Gas, 1,572 feet. Salt water, 1,598 feet.
	1	Ohio.	Jordan, No. 2.	425	do.	1,548	50	1,123	377	1,564	.....	Gas, 1,567 feet.
	2	Ohio.	Jordan, No. 3.	423	do.	1,557	68	1,134	366	1,565	.....	.....
	3	Ohio.	E. Leighty, No. 2.	423	do.	1,554	64	1,131	369	.....	.....	Salt water, 1,570 feet.
	4	Ohio.	E. Leighty, No. 1.	424	McClosky.	1,742	6	1,319	181	1,783	Dry	.....
N. W.	5	Ohio.	E. Leighty, No. 4.	424	Kirkwood.	1,565	20	1,141	359	1,816	Dry	.....
	6	Ohio.	Shuey, No. 2.	422	Bridgeport.	900	24	476	1,024	.....	.....	.....
	7	Ohio.	E. Leighty, No. 1.	424	Buchanan.	1,285	105	861	639	.....	.....	.....
	8	Ohio.	Shuey, No. 2.	422	Kirkwood-1.	1,551	23	1,127	373	.....	.....	.....
N. W.	9	Ohio.	Shuey, No. 2.	422	Kirkwood-2.	1,602	16	1,178	322	1,604	100	Gas, 1,602 feet.
	10	Ohio.	Shuey, No. 2.	422	Kirkwood.	1,560	26	1,134	362	1,597	Dry	Salt water, 1,592 feet.



8. E...	1 Ohio	G. Barnett, No. 1	414	do	1,557	36	1,143	357	1,582	1,593	60	Gas, 1,575 feet
7- N. W.	1 Ohio	N. Buchanan, No. 1	416	do	1,565	65	1,149	351				
8- N. W.	1 Ohio	G. Barnett, No. 2	442	Kirkwood	1,600	38	1,158	342	1,626	1,646	5	Gas, 1,620 feet. Salt water, 1,638 feet.
11- N. E.	2 Ohio	A. Jordan, No. 1	440	do	1,605	35	1,165	335		1,641	Dry	Salt water, 1,640 feet. Well abandoned.
	1 Shaw	Knight, No. 3	487									No record.
	2 Shaw	Knight, No. 2	472	Stray	700		232	1,268				do.
	3 Shaw	Knight, No. 1	468	Bridgeport	815		347	1,153				Gas, 815 feet.
	4 Shaw	Knight, No. 4	464	do	920	36	452	1,048		956		No record.
	5 Shaw	Knight, No. 5	462									do.
	6 Shaw	Harding, No. 1	462	Bridgeport		39	485	1,015	948	986	20	Gas, 948 feet.
	7 Shaw	Ridgely, No. 1	471	do	947	32	486	1,014				Salt water.
				do	957	35	554	946			150	Gas, 1,205 feet.
				Stray	1,025	7	734	766	1,206			
				do	1,227	17	756	744		1,244		Gas, 906 feet.
	1 Shaw	A. Buchanan, No. 2	464	Bridgeport	906	47	442	1,058	937	953	60	Gas, 906 feet.
	2 Shaw	A. Buchanan, No. 10	464	Stray	720	10	256	1,244				Gas, 915 feet.
	3 Shaw	A. Buchanan, No. 9	462	Bridgeport	914	48	450	1,050	927	962	125	Gas, 935 feet.
	4 Shaw	A. Buchanan, No. 11	462	do	928	30	466	1,034	937	958	150	Gas, 935 feet.
	5 Shaw	W. Gillespie, No. 1	465	do	933	122	471	1,029		1,058	Dry	Salt water, 985 feet.
				Kirkwood	1,560	40	1,095	405		1,611	Dry	Salt water, 1,570 feet.
				Bridgeport	1,011	9	571	929				Elevation estimated.
				Buchanan	1,300	15	860	640				
	1 Shaw	I. Buchanan, No. 1	440	Kirkwood	1,622	18	1,182	318				
				Tracey	1,735	15	1,295	205				
				McClosky	1,774	7	1,334	166	1,774	1,781	100	Gas, 1,774 feet.
				Bridgeport	1,000	175	560	940				Salt water, 1,020 feet.
				Buchanan	1,280	120	840	660				Salt water, 1,290 feet.
	2 Shaw	J. Buchanan, No. 1	440	Kirkwood	1,600	15	1,160	340				Elevation estimated.
				Tracey	1,740	15	1,300	200				
				McClosky	1,777	13	1,337	163		2,017	Dry	Show of oil and gas, 1,777 feet.
	1 Ohio	Taylor, No. 1	463	Bridgeport	967	33	494	1,006				Salt water.
				do	1,065	25	602	898				Gas, 1,206 feet.
				Stray	1,200	44	737	763	1,204	1,246	100	
				Bridgeport	940	20	470	1,030				Salt water.
				Buchanan	1,270	110	800	700				Salt water, 1,280 feet.
				Kirkwood	1,615	25	1,145	355				Salt water, 1,630 feet.
	1 Ohio	Des Beuof, No. 1	470	Tracey	1,725	10	1,265	245				Salt water, 1,730 feet.
				McClosky	1,870	20	1,300	200				Salt water, 1,870 feet.
					1,900	15	1,430	70		1,940	Dry	Elevation estimated.
				Bridgeport	1,045	205	586	914				Salt water.
	1 Donnel, Agent	C. Buchanan, No. 5	459	Kirkwood	1,630		1,171	329	1,632	1,672	Dry	Salt water, 1,665 feet.



## Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
19— S. W.	1	Big Four	S. Seed, No. 5	512	Kirkwood	1,639	23	1,127	373	1,644	30	Salt water, 1,852 feet
	2	Shamless	S. Seed, No. 2	508	McClosky	1,852		1,340	160	1,852	Show	Salt water, 963 feet
	3	Big Four	S. Seed, No. 3	494	Bridgeport	963		455	1,045			Salt water, 1,472 feet
	4	Big Four	S. Seed, No. 2	487	Stray	1,472	51	964	636	1,600	100	Slate, 1,630 to 1,635 feet
	5	Big Four	S. Seed, No. 1	475	Kirkwood	1,600	15	1,092	408			
	6	Shamless	S. Seed, No. 1	490	do	1,633	18	1,139	361			
	7	Big Four	S. Seed, No. 4	470	do	1,622	31	1,113	387	1,640		
	8	Associated Producers	Snyder, No. 10	477	do	1,588	12	1,151	349	1,650		
	9	Shamless	Snyder, No. 1	483	Bridgeport	940		958	1,050			Salt water, 940 feet
	10	Shamless	S. Seed, No. 3	504	Stray	1,448	34	1,100	400	1,624	110	
	11	Silurian	S. Seed, No. 1	458	Kirkwood	1,500	55	1,117	383	1,600		Slate, 1,615 to 1,627 feet
21— N. E.	1	Ohio	R. Buchanan, No. 6	467	do	1,315	18	1,109	391			
	2	Ohio	R. Buchanan, No. 14	485	Buchanan	1,586		972	528			
	3	Ohio	R. Buchanan, No. 13	482	Kirkwood	1,595	53	1,107	393	1,648		
	4	Ohio	R. Buchanan, No. 11	479	do	1,595	57	1,091	409	1,625		Salt water
	5	Ohio	R. Buchanan, No. 1	482	Stray	760	40	202	1,198			do
	6	Ohio	Wm. Seed, No. 1	483	Bridgeport	1,003	57	846	955			do
					Buchanan	1,345	110	887	613			
					Kirkwood-1	1,600	25	1,142	358	1,606	Show	Salt water, 1,612 feet
					Kirkwood-2	1,650	10	1,192	308			Salt water, 1,655 feet
					McClosky	1,824	5	1,366	134	1,840	Dry	Salt water
					Buchanan	1,308	17	841	699	1,311	200	
					do	1,316	51	831	669	1,320	190	
					do	1,305	53	823	677	1,310	360	
					do	1,313	37	834	666	1,318	400	
					do	1,332	12	850	650	1,344	200	
					do	1,331	28	848	652	1,359	300	

[illegible]

**N. W.**

Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
25— N. W..	11	Leighty.....	Leighty, No. 6.....	510	Kirkwood-1.....	1,614	38	1,104	396	.....	.....	.....	.....
					Kirkwood-2.....	1,675	15	1,165	335	.....	.....	.....	.....
					Tracey.....	1,703	32	1,193	307	.....	.....	.....	.....
	12	Leighty.....	Leighty, No. 3.....	487	McClosky.....	1,844	18	1,334	166	.....	1,866	9	Salt water, 1,862 feet.....
					Kirkwood.....	1,574	40	1,087	413	.....	1,588	15	Tracey sand, dry.....
					Tracey.....	1,691	25	1,204	296	.....	.....	.....	.....
	13	Leighty.....	Leighty, No. 7.....	490	Kirkwood-1.....	1,604	8	1,114	388	.....	.....	.....	.....
					Kirkwood-2.....	1,615	18	1,126	376	.....	.....	.....	.....
					Kirkwood-3.....	1,645	11	1,153	345	.....	.....	.....	.....
	14	Ohio.....	Snyder, No. 8.....	502	McClosky.....	1,830	29	1,240	160	.....	1,859	200	.....
					Bridgeport.....	1,000	180	498	1,002	.....	.....	.....	Salt water, 1,020 feet.....
					Buchanan.....	1,320	120	818	682	.....	.....	.....	Salt water, 1,350 feet.....
	15	Ohio.....	Snyder, No. 7.....	495	Kirkwood.....	1,605	25	1,103	397	.....	1,612	.....	Gas, 1,609 feet.....
					Tracey.....	1,720	10	1,218	282	.....	1,721	.....	Gas, 1,720 feet.....
					McClosky.....	1,832	6	1,330	170	.....	1,833	175	Gas, 1,832 feet.....
S. W..	1	Ohio.....	Snyder, No. 7.....	495	Bridgeport.....	1,050	150	555	945	.....	.....	.....	Salt water, 1,125 feet.....
					Buchanan.....	1,300	130	805	695	.....	.....	.....	Salt water, 1,320 feet.....
					Kirkwood.....	1,632	30	1,127	373	.....	1,628	.....	Gas, 1,623 feet.....
	1	Ohio.....	Vandermark, No. 16.....	495	Tracey.....	1,708	12	1,213	287	.....	.....	.....	.....
					McClosky.....	1,834	10	1,339	161	.....	1,834	20	.....
					Bridgeport.....	1,000	75	505	995	.....	.....	.....	.....
	2	Ohio.....	Vandermark, No. 11.....	512	Buchanan.....	1,280	120	785	715	.....	.....	.....	.....
					Kirkwood.....	1,620	13	1,125	375	.....	.....	.....	.....
					Tracey.....	1,715	3	1,220	280	.....	.....	.....	.....
	2	Ohio.....	Vandermark, No. 11.....	512	McClosky.....	1,826	3	1,331	169	.....	1,826	100	Gas, 1,826 feet.....
					Bridgeport.....	1,055	45	543	957	.....	.....	.....	Salt water.....
					Buchanan.....	1,325	75	813	687	.....	.....	.....	Salt water.....
	2	Ohio.....	Vandermark, No. 11.....	512	Kirkwood.....	1,623	17	1,111	689	.....	.....	.....	.....
					Tracey.....	1,720	16	1,206	292	.....	.....	.....	.....
					McClosky.....	1,841	7	1,339	171	.....	1,842	850	Gas, 1,841 feet.....

8 E.	6 Ohio.....	Irwin, No. 2.....	514	1,604	55	1,000	410	1,617	1,659	85 Gas, 1,617 feet.
	7 Ohio.....	Irwin, No. 4.....	480	1,253	113	832	608	1,612	1,665	40 Gas, 1,612 feet.
	8 Ohio.....	Irwin, No. 5.....	464	1,613	115	536	604	1,618	1,661	30 Gas, 1,618 feet.
	9 Ohio.....	Irwin, No. 3.....	459	1,618	33	1,154	345	1,618	1,661	100 Gas, 1,630 feet.
	10 Ohio.....	Irwin, No. 1.....	519	1,578	85	528	974	1,630	1,634	50 Gas, 1,528 feet.
	1 Ohio.....	T. Gillespie, No. 5.....	501	1,528	27	1,117	383	1,528	1,545	Dry
	2 Ohio.....	T. Gillespie, No. 19.....	460	1,530	10	1,029	491	1,538	1,558	60 Gas, 1,538 feet.
	3 Ohio.....	T. Gillespie, No. 16.....	466	1,538	14	1,009	431	1,538	1,550	50 Gas, 1,548 feet.
	4 Ohio.....	T. Gillespie, No. 13.....	460	1,527	29	1,061	439	1,548	1,556	50 Gas, 1,548 feet.
	5 Ohio.....	T. Gillespie, No. 11.....	465	1,100	104	840	860	1,537	1,552	50 Gas, 1,537 feet.
22— N E.	1 Ohio.....	Ryan, No. 8.....	431	1,537	15	1,077	1,026	941	967	100
	2 Ohio.....	Ryan, No. 9.....	432	1,535	28	674	1,532	1,550	1,576	20 Salt water, 1,532 feet.
	3 Ohio.....	Ryan, No. 12.....	432	1,531	40	1,124	376	1,531	1,576	Salt water.
	4 Ohio.....	Ryan, No. 13.....	429	1,531	30	1,090	401	1,531	1,576	Flowing from McClosky sand
	5 Ohio.....	Ryan, No. 3.....	429	1,526	345	468	1,032	1,772	1,773	Tracey sand about 900 feet
	6 Ohio.....	Ryan, No. 1.....	427	1,771	3	1,339	161	1,772	1,773	Flowing well. Gas, 1,763 feet
	7 Unknown.....	School House Lot.....	427	1,920	100	491	1,030	1,554	1,559	No record
	8 Ohio.....	G. Ryan, No. 4.....	427	1,260	55	831	699	1,554	1,559	Show
	9 Ohio.....	G. Ryan, No. 11.....	430	1,535	25	1,006	404	1,552	1,557	Slate, 1,542 to 1,547 feet.
	10 Ohio.....	G. Ryan, No. 10.....	427	1,763	105	508	922	1,554	1,557	Salt water, 950 feet.
	11 Ohio.....	G. Ryan, No. 7.....	427	1,547	16	1,120	380	1,554	1,557	20 Gas, 1,524 feet.
	12 Ohio.....	G. Ryan, No. 6.....	430	1,548	80	830	690	1,554	1,557	25 Gas, 1,530 feet.
	13 Ohio.....	G. Ryan, No. 5.....	433	1,548	67	1,055	443	1,554	1,557	150
	14 Ohio.....	G. Ryan, No. 2.....	432	1,548	110	273	1,227	1,554	1,557	140
	1 Ohio.....	T. Gillespie, No. 3.....	436	1,548	165	508	922	1,554	1,557	Well abandoned.
	2 Ohio.....	T. Gillespie, No. 6.....	440	1,548	80	830	690	1,554	1,557	125 Gas, 1,510 feet.
	3 Ohio.....	T. Gillespie, No. 21.....	435	1,515	15	1,074	426	1,515	1,554	200 Gas, 1,515 feet.
				1,515	39	1,075	425	1,515	1,554	26 Gas, 1,525 feet.
				1,515	135	530	970	1,515	1,554	
				1,515	80	815	865	1,515	1,554	
				1,515	45	1,000	420	1,515	1,554	

Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
23— N. W.	4	Ohio.....	T. Gillespie, No. 22.....	430 {	Bridgeport.....	925	175	495	1,005	.....	.....	.....
					Buchanan.....	1,250	80	820	680	.....	.....	.....
	5	Ohio.....	T. Gillespie, No. 17.....	487 {	Kirkwood.....	1,497	61	1,067	433	1,559	30	Gas, 1,520 feet.
	6	Ohio.....	T. Gillespie, No. 7.....	481 {	do.....	1,538	34	1,051	449	1,578	35	Gas, 1,542 feet.
					do.....	1,540	50	1,059	441	1,584	40	Gas, 1,584 feet.
	7	Ohio.....	T. Gillespie, No. 8.....	492 {	Buchanan.....	1,283	107	801	669	.....	.....	.....
					Kirkwood.....	1,570	47	1,078	422	1,576	25	Gas, 1,576 feet.
	8	Ohio.....	T. Gillespie, No. 9.....	504 {	Buchanan.....	1,294	106	790	710	.....	.....	.....
	9	Ohio.....	T. Gillespie, No. 10.....	466 {	Kirkwood.....	1,577	60	1,073	427	1,594	30	Gas, 1,594 feet.
					Bridgeport.....	954	22	488	1,012	976	200	.....
S. W.	1	Ohio.....	T. Gillespie, No. 12.....	450 {	Buchanan.....	1,197	153	747	753	.....	.....	.....
					Kirkwood.....	1,526	37	1,076	424	1,549	45	Gas, 1,549 feet.
	2	Ohio.....	T. Gillespie, No. 14.....	449 {	do.....	1,515	37	1,066	434	1,520	60	Gas, 1,520 feet.
	3	Ohio.....	T. Gillespie, No. 15.....	447 {	Kirkwood-1.....	1,504	39	1,067	443	1,535	50	Gas, 1,535 feet.
	4	Ohio.....	T. Gillespie, No. 2.....	447 {	Kirkwood-2.....	1,625	19	1,178	322	1,648	.....	.....
	5	Ohio.....	T. Gillespie, No. 4.....	449 {	Kirkwood.....	1,500	.....	1,053	447	1,520	100	Gas, 1,515 feet.
	6	Ohio.....	T. Gillespie, No. 18.....	450 {	do.....	1,524	.....	1,075	425	1,524	30	Gas, 1,524 feet.
					do.....	1,487	70	1,037	463	1,511	125	Gas, 1,535 feet.
	7	Ohio.....	T. Gillespie, No. 20.....	430 {	Bridgeport.....	900	40	470	1,030	.....	.....	.....
					Kirkwood.....	1,490	55	1,060	440	1,510	45	Gas, 1,510 feet.
S. E.	8	Ohio.....	T. Gillespie, No. 21.....	430 {	Bridgeport.....	925	75	495	1,005	.....	.....	.....
					Buchanan.....	1,250	80	820	680	.....	.....	.....
	1	Ohio.....	Gould, No. 1.....	445 {	Kirkwood.....	1,504	46	1,074	426	1,510	25	Gas, 1,510 feet.
	2	Ohio.....	Gould, N. 10.....	428 {	do.....	1,514	51	1,069	431	1,544	125	Gas, 1,544 feet.
	3	Ohio.....	Gould, No. 12.....	427 {	do.....	1,490	48	1,062	438	1,500	150	Gas, 1,520 feet.
					Bridgeport.....	900	40	473	1,027	.....	.....	.....
					Kirkwood.....	1,490	50	1,063	437	1,518	15	Gas, 1,520 feet.
	4	Ohio.....	Gould, No. 13.....	427 {	Bridgeport.....	930	200	503	997	.....	.....	.....
					Buchanan.....	1,260	70	833	667	.....	.....	.....
	5	Ohio.....	Gould, No. 8.....	427 {	Kirkwood.....	1,496	58	1,069	431	1,521	25	Gas, 1,521 feet.
					Buchanan.....	1,214	166	787	713	.....	.....	.....
					Kirkwood.....	1,517	159	1,090	410	1,517	80	Gas, 1,517 feet.



Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- vation— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
24— S. E.	1	Shannon	Crutchfield, No. 1	467	Bridgeport	1,050	70	583	917			
					Bridgeport and Buchanan	1,185	275	718	782			Salt water
					Kirkwood	1,590	58	1,123	377	1,648	10	Salt water, 1,643 feet
	2	Central Refining Co.	Hollister, No. 3	470	Kirkwood	1,578	61	1,108	392	1,639		
					do	1,630	23	1,150	350	1,653		Salt water, 1,430 feet
	4	Shannon	Crutchfield, No. 2	511	Bridgeport	1,065	115	554	946			
					Buchanan	1,350	115	839	661			Salt water, 1,350 feet
					Kirkwood	1,618	48	1,107	393	1,667	40	
	5	Central Refining Co.	Hollister, No. 1	509	do	1,604	51	1,905	405			
					Tracey	1,710	10	1,201	299			
					McClosky	1,824	11	1,315	185	1,857		
	6	Busch-Everett	Gee, No. 1	505	Bridgeport	1,075		570	930			
					Buchanan	1,360		855	645			
					Kirkwood	1,677		1,172	328			Dry
25— N. E.	7	Busch-Everett	Gee, No. 2	503	Bridgeport	925		422	1,078			
					Stray	1,470		967	533			
					Kirkwood	1,651		1,148	352			
	1	Associated Producers	Snyder, No. 12	466	Bridgeport	970		504	996			
					Buchanan	1,315		849	651			
					Kirkwood-1	1,570	45	1,104	396	1,580	40	
	2	Associated Producers	Snyder, No. 3	463	Kirkwood-2	1,625	20	1,159	341	1,649		Show
					Bridgeport-1	900	4	437	1,063			
					Bridgeport-2	960		497	1,003			Salt water, 960 feet
	3	Associated Producers	Snyder, No. 4	462	Buchanan	1,305		842	658			
					Kirkwood	1,600	3	1,137	363	1,650		Dry
					Bridgeport	900	5	438	1,062			Show

4	Associated Producers.....	Snyder, No. 1.....	464	Bridgport.....	383	21	471	1,079	
				Buchanan.....	1,300		326	684	
				Kirwood.....	1,581	10	116	834	1,620
5	Associated Producers.....	Snyder, No. 13.....	463	Bridgport.....	1,363		438	1,037	
				Buchanan.....	1,581	32	118	832	1,618
				Kirwood.....	1,581	12	432	1,083	
6	Associated Producers.....	Snyder, No. 6.....	463	Bridgport.....	1,263		942	688	
				Buchanan.....	1,573		116	388	1,600
				Kirwood.....	1,573		122	378	1,600
7	Associated Producers.....	Snyder, No. 2.....	462	Bridgport.....	1,573	32	116	382	1,583
				Buchanan.....	1,573	34	119	381	1,586
				Kirwood.....	1,573	29	117	383	1,514
8	Ohio.....	Borden, No. 3.....	463	Bridgport.....	1,580		124	376	
				Buchanan.....	1,580		124	376	
				Kirwood.....	1,580		124	376	
9	Ohio.....	Borden, No. 4.....	464	Bridgport.....	1,710		246	354	1,713
				Buchanan.....	1,710		246	354	1,713
				Kirwood.....	1,710		246	354	1,713
10	Ohio.....	Borden, No. 5.....	465	Bridgport.....	1,691	17	120	374	1,583
				Buchanan.....	1,691	30	126	380	1,583
				Kirwood.....	1,691	30	126	380	1,583
11	Ohio.....	Borden, No. 6.....	477	Bridgport.....	1,640	25	163	337	1,835
				Buchanan.....	1,640	25	163	337	1,835
				Kirwood.....	1,640	25	163	337	1,835
12	Ohio.....	Borden, No. 7.....	471	Bridgport.....	1,802	33	125	380	1,592
				Buchanan.....	1,802	33	125	380	1,592
				Kirwood.....	1,802	33	125	380	1,592
13	Ohio.....	Borden, No. 8.....	463	Bridgport.....	1,591	8	124	376	1,586
				Buchanan.....	1,591	8	124	376	1,586
				Kirwood.....	1,591	8	124	376	1,586
14	Ohio.....	Borden, No. 9.....	502	Bridgport.....	1,775	95	174	702	1,835
				Buchanan.....	1,775	95	174	702	1,835
				Kirwood.....	1,775	95	174	702	1,835
15	Ohio.....	Borden, No. 10.....	490	Bridgport.....	1,640	30	126	380	1,583
				Buchanan.....	1,640	30	126	380	1,583
				Kirwood.....	1,640	30	126	380	1,583
16	Ohio.....	Borden, No. 11.....	474	Bridgport.....	1,835	23	132	362	1,835
				Buchanan.....	1,835	23	132	362	1,835
				Kirwood.....	1,835	23	132	362	1,835
17	Ohio.....	Borden, No. 12.....	466	Bridgport.....	1,586	20	124	376	1,586
				Buchanan.....	1,586	20	124	376	1,586
				Kirwood.....	1,586	20	124	376	1,586
18	Ohio.....	Borden, No. 13.....	470	Bridgport.....	1,691	16	120	374	1,583
				Buchanan.....	1,691	16	120	374	1,583
				Kirwood.....	1,691	16	120	374	1,583
19	Ohio.....	Borden, No. 14.....	470	Bridgport.....	1,775	95	174	702	1,835
				Buchanan.....	1,775	95	174	702	1,835
				Kirwood.....	1,775	95	174	702	1,835
20	Ohio.....	Borden, No. 15.....	481	Bridgport.....	1,640	30	126	380	1,583
				Buchanan.....	1,640	30	126	380	1,583
				Kirwood.....	1,640	30	126	380	1,583
21	Ohio.....	Borden, No. 16.....	481	Bridgport.....	1,775	95	174	702	1,835
				Buch					

**N.W.:**



Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
25— N. W.	11	Leighty	Leighty, No. 6.	510	Kirkwood-1	1, 614	38	1, 104	396	.....	.....	.....
					Kirkwood-2	1, 675	15	1, 165	335	.....	.....	.....
					Tracey	1, 703	32	1, 193	307	.....	.....	.....
	12	Leighty	Leighty, No. 3.	487	McClosky	1, 844	18	1, 334	166	.....	9	Salt water, 1,862 feet.
					Kirkwood	1, 574	40	1, 087	413	.....	15	Tracey sand, dry.
					Tracey	1, 691	25	1, 204	296	.....	.....	.....
	13	Leighty	Leighty, No. 7.	490	Kirkwood-1	1, 604	8	1, 114	386	.....	.....	.....
					Kirkwood-2	1, 615	18	1, 125	375	.....	.....	.....
					Kirkwood-3	1, 645	11	1, 155	345	.....	.....	.....
	14	Ohio	Snyder, No. 8.	502	McClosky	1, 830	29	1, 340	160	.....	200	Salt water, 1,020 feet.
					Bridgeport	1, 000	180	498	1, 002	.....	.....	Salt water, 1,350 feet.
					Buchanan	1, 320	120	818	682	.....	.....	Gas, 1,609 feet.
S. W.	15	Ohio	Snyder, No. 7.	495	Kirkwood	1, 605	25	1, 103	397	.....	.....	Gas, 1,720 feet.
					Tracey	1, 720	10	1, 218	282	.....	.....	Gas, 1,832 feet.
					McClosky	1, 832	6	1, 330	170	.....	175	Salt water, 1,125 feet.
	1	Ohio	Vandermark, No. 16.	495	Bridgeport	1, 050	150	555	945	.....	.....	Salt water, 1,320 feet.
					Buchanan	1, 300	130	805	695	.....	.....	Gas, 1,623 feet.
					Kirkwood	1, 632	30	1, 127	373	.....	.....	.....
	2	Ohio	Vandermark, No. 11.	512	Tracey	1, 708	12	1, 213	287	.....	20	.....
					McClosky	1, 834	10	1, 339	161	.....	.....	.....
					Buchanan	1, 280	75	505	995	.....	.....	.....
	1	Ohio	Vandermark, No. 16.	495	Kirkwood	1, 620	120	785	715	.....	.....	.....
					Tracey	1, 715	13	1, 125	375	.....	.....	.....
					McClosky	1, 826	3	1, 220	280	.....	.....	.....
	2	Ohio	Vandermark, No. 11.	512	Bridgeport	1, 055	45	543	109	.....	100	Gas, 1,826 feet.
					Buchanan	1, 325	75	813	957	.....	.....	Salt water.
					Kirkwood	1, 623	17	1, 111	687	.....	.....	Salt water.
	2	Ohio	Vandermark, No. 11.	512	Tracey	1, 720	15	1, 208	689	.....	.....	.....
					McClosky	1, 841	7	1, 320	292	.....	.....	.....
					McClosky	1, 841	7	1, 320	171	.....	850	Gas, 1,841 feet.

3	Ohio.....	Vandermark, No. 15.....	496	Bridgeport.....	1, 080	50	554	946	.....	.....	.....	Salt water, 1,055 feet.....
				Buchanan.....	1, 200	40	764	736	.....	.....	.....	Salt water.....
				Kirkwood.....	1, 592	30	1, 096	404	.....	.....	.....	Gas, 1,594 feet.....
				Tracey.....	1, 711	14	1, 215	285	.....	.....	.....	Gas, 1,712 feet.....
				McClosky.....	1, 823	5	1, 327	173	.....	.....	720	Gas, 1,823 feet.....
4	Ohio.....	Vandermark, No. 17.....	474	Bridgeport.....	1, 976	24	502	998	.....	.....	.....	.....
				Buchanan.....	1, 280	100	808	694	.....	.....	.....	.....
				Kirkwood.....	1, 569	23	1, 095	405	.....	.....	.....	Gas, 1,570 feet.....
				Tracey.....	1, 682	12	1, 208	292	.....	.....	.....	Gas, 1,685 feet.....
				McClosky.....	1, 800	6	1, 326	174	.....	.....	1, 500	Flowing well. Gas, 1,800 feet. Quit in limestone.....
5	Ohio.....	Vandermark, No. 3.....	484	Kirkwood.....	1, 612	26	1, 128	372	.....	.....	25	.....
				do.....	1, 638	23	1, 136	364	.....	.....	.....	.....
				Tracey.....	1, 722	16	1, 220	280	.....	.....	60	Gas, 1,728 feet.....
				Bridgeport.....	1, 020	23	493	1, 007	.....	.....	40	.....
				Kirkwood.....	1, 633	27	1, 126	374	.....	.....	45	Gas, 1,645 feet.....
6	Ohio.....	Vandermark, No. 2.....	502	do.....	1, 630	40	1, 127	373	.....	.....	.....	.....
				Tracey.....	1, 713	20	1, 210	290	.....	.....	30	Gas, 1,723 feet.....
				Bridgeport.....	1, 010	75	495	1, 005	.....	.....	.....	Salt water, 1,030 feet.....
				Buchanan.....	1, 360	65	845	655	.....	.....	.....	Salt water, 1,375 feet.....
				Kirkwood.....	1, 640	15	1, 125	375	.....	.....	.....	.....
7	Ohio.....	Vandermark, No. 7.....	507	Tracey.....	1, 721	14	1, 266	294	.....	.....	.....	.....
				McClosky.....	1, 841	14	1, 326	174	.....	.....	1, 080	Gas, 1,841 feet.....
				Shallow.....	1, 650	50	1, 179	321	.....	.....	.....	Salt water.....
				Bridgeport.....	1, 000	205	529	1, 971	.....	.....	.....	Hole full of water, 1,040 feet.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
8	Ohio.....	Vandermark, No. 6.....	503	Buchanan.....	1, 325	100	854	646	.....	.....	.....	.....
				Kirkwood.....	1, 612	27	1, 141	359	.....	.....	.....	.....
				Stray.....	1, 663	8	1, 192	308	.....	.....	.....	Salt water, 1,663 feet.....
				Tracey.....	1, 705	14	1, 234	266	.....	.....	60	.....
				McClosky.....	1, 842	.....	1, 371	129	.....	.....	.....	.....
9	Ohio.....	Vandermark, No. 1.....	471	.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
10	Ohio.....	McClosky, No. 1.....	481	.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
11	International Oil & Gas Co.....	McClosky, No. 8.....	485	Kirkwood.....	1, 597	30	1, 112	388	.....	.....	.....	.....
				McClosky.....	1, 810	12	1, 325	175	.....	.....	300	.....
				Bridgeport.....	990	210	510	990	.....	.....	.....	.....
				Kirkwood.....	1, 591	35	1, 111	389	.....	.....	.....	.....
				Stray.....	1, 659	6	1, 179	321	.....	.....	.....	Salt water, 1,659 feet.....
12	International Oil & Gas Co.....	McClosky, No. 9.....	480	Tracey.....	1, 683	36	1, 213	287	.....	.....	.....	.....
				McClosky.....	1, 824	13	1, 344	156	.....	.....	1, 700	.....
				Bridgeport.....	1, 000	75	495	1, 005	.....	.....	.....	.....
				Buchanan.....	1, 350	70	845	655	.....	.....	.....	.....
				Kirkwood.....	1, 630	25	1, 125	375	.....	.....	.....	.....
13	Ohio.....	Vandermark, No. 10.....	505	Tracey.....	1, 740	10	1, 235	265	.....	.....	.....	.....
				McClosky.....	1, 843	9	1, 338	162	.....	.....	750	Gas, 1,843 feet.....
				.....	.....	.....	.....	.....	.....	.....	80	Gas, 1,622 feet.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
14	International Oil & Gas Co.....	Vandermark, No. 1.....	519	Kirkwood.....	1, 611	37	1, 092	408	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
15	Ohio.....	Vandermark, No. 1.....	519	.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
16	Ohio.....	Vandermark, No. 1.....	519	.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....
				.....	.....	.....	.....	.....	.....	.....	.....	.....

## Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
25— S. E....	2	Ohio.....	Vandermark, No. 9.....	500	Bridgeport.....	980	120	480	1,020	.....	.....	Salt water, 1,005 feet.....
					Buchanan.....	1,285	95	785	715	.....	.....	Salt water 1,330 feet.....
					Kirkwood.....	1,605	30	1,105	395	.....	.....	.....
					Tracey.....	1,710	10	1,210	290	.....	.....	.....
					McClosky.....	1,828	12	1,328	172	.....	.....	.....
	3	Ohio.....	Vandermark, No. 12.....	495	Stray.....	1,898	7	1,398	102	2,101	Dry	Salt water.....
					Bridgeport.....	960	90	465	1,035	.....	.....	Salt water, 1,000 feet.....
					Buchanan.....	1,300	100	805	695	.....	.....	Salt water, 1,350 feet.....
					Kirkwood.....	1,612	33	1,117	383	.....	.....	.....
					Tracey.....	1,705	10	1,210	290	.....	.....	.....
S. E....	4	Ohio.....	Vandermark, No. 8.....	489	McClosky.....	1,832	9	1,337	163	1,835	40	Gas, 1,833 feet.....
					Kirkwood.....	1,607	37	1,118	382	.....	.....	.....
					McClosky.....	1,823	6	1,334	166	1,823	1,200	Gas, 1,822 feet.....
					Bridgeport.....	990	110	481	1,019	.....	.....	Salt water, 1,025 feet.....
					Buchanan.....	1,385	95	876	624	.....	.....	Salt water, 1,400 feet.....
	5	Ohio.....	Vandermark, No. 13.....	509	Kirkwood.....	1,617	30	1,108	392	1,620	.....	Gas, 1,618 feet.....
					McClosky.....	1,829	6	1,330	170	1,840	1,860	Gas, 1,839 feet.....
					Kirkwood.....	1,616	29	1,107	393	1,622	160	Gas, 1,620 feet.....
					Bridgeport.....	925	.....	426	1,074	.....	.....	.....
					Buchanan.....	1,328	100	829	671	.....	.....	.....
S. E....	6	Ohio.....	Vandermark, No. 5.....	509	Kirkwood.....	1,616	24	1,117	383	1,620	125	.....
					Tracey.....	1,710	.....	1,211	289	.....	.....	.....
					McClosky.....	1,842	.....	1,343	157	.....	150	.....
					Bridgeport.....	1,000	210	522	978	.....	.....	Salt water.....
					Buchanan.....	1,325	100	847	633	.....	.....	do.....
	7	International Oil & Gas Co.....	McClosky, No. 2.....	499	Kirkwood.....	1,625	60	1,147	353	.....	.....	Calcareous sand.....
					Tracey.....	1,695	35	1,217	283	.....	.....	Soft limestone.....
					McClosky.....	1,820	11	1,342	158	1,831	300	.....
					Kirkwood.....	1,605	20	1,122	378	.....	.....	.....
					McClosky.....	1,820	16	1,337	163	1,843	1,000	.....
S. E....	8	International Gas & Oil Co.....	McClosky, No. 5.....	478	Bridgeport.....	1,000	210	522	978	.....	.....	.....
					Buchanan.....	1,325	100	847	633	.....	.....	.....
					Kirkwood.....	1,625	60	1,147	353	.....	.....	.....
					Tracey.....	1,695	35	1,217	283	.....	.....	.....
					McClosky.....	1,820	11	1,342	158	1,831	300	.....
	9	International Oil & Gas Co.....	McClosky, No. 7.....	483	Kirkwood.....	1,605	20	1,122	378	.....	.....	.....
					McClosky.....	1,820	16	1,337	163	1,843	1,000	.....
					Bridgeport.....	1,000	210	522	978	.....	.....	.....
					Buchanan.....	1,325	100	847	633	.....	.....	.....
					Kirkwood.....	1,625	60	1,147	353	.....	.....	.....







## Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
26— S. E....	15	Big Four	S. Gillespie, No. 5.	494	Kirkwood.....	1,590	35	1,096	404	1,600	150	.....
					Tracey.....	1,688	32	1,194	306	.....	.....	.....
					McClosky.....	1,812	2	1,318	182	.....	.....	.....
					Kirkwood.....	1,596	30	1,088	412	.....	.....	.....
					Tracey.....	1,693	27	1,186	314	.....	.....	.....
	16	Big Four	S. Gillespie, No. 3.	507	McClosky.....	1,841	28	1,334	166	.....	120	.....
					Bridgeport.....	1,080	60	576	924	.....	.....	.....
					Buchanan.....	1,285	90	781	719	.....	.....	.....
					Kirkwood.....	1,595	32	1,091	409	.....	.....	.....
					Tracey.....	1,709	11	1,205	285	.....	.....	.....
27— N. E....	17	Ohio	G. Ryan, No. 12.	504	McClosky.....	1,826	43	1,322	178	.....	.....	.....
					Bridgeport.....	975	25	481	1,019	.....	.....	.....
					Buchanan.....	1,300	100	806	694	.....	.....	.....
					Kirkwood.....	1,592	35	1,098	402	.....	.....	.....
					Tracey.....	1,693	10	1,199	301	.....	.....	.....
	18	Ohio	G. Ryan, No. 13.	494	McClosky.....	1,802	4	1,308	192	.....	.....	.....
					Kirkwood.....	1,498	.....	1,044	456	.....	.....	.....
					Bridgeport.....	940	110	478	1,022	.....	25	.....
					Buchanan.....	1,225	100	763	737	.....	.....	.....
					Kirkwood.....	1,520	38	1,058	442	.....	.....	.....
N. W..	1	Ohio	T. Gillespie, No. 1.	454	Bridgeport.....	950	100	484	1,016	.....	.....	.....
					Buchanan.....	1,230	130	764	736	.....	.....	.....
					Kirkwood.....	1,514	13	1,048	452	.....	.....	.....
					do.....	1,505	.....	1,051	449	.....	.....	.....
					do.....	1,515	31	1,057	443	.....	.....	.....
	2	Ohio	L. Gillespie, No. 3.	454	Buchanan.....	1,243	32	731	769	.....	.....	.....
					do.....	1,255	.....	740	760	.....	.....	.....
					Kirkwood.....	1,622	10	1,114	386	.....	.....	.....
					Bridgeport and Buchanan.....	1,100	170	583	917	.....	.....	.....
					Kirkwood.....	1,615	47	1,098	402	.....	.....	.....

S. W..	4 Fisher.	Lackey, No. 1	505	Bridgeport.	980	46	449	1,051	1,005	1,026	Dry	No record
	1 Ohio	Wm. Seed, No. 1	531	do.	977	52	449	1,051	985	1,034	Gas	Gas, 998 feet; gas 2,500,000 cu. ft. daily
	1 Ohio	P. Leighty, No. 13	528	do.	960	47	455	1,045	981	1,007	30	Gas, 995 feet.
	2 Ohio	P. Leighty, No. 2	505	do.	970	21	436	1,064	1,000	1,000	180	Gas, 1,000 feet.
	3 Ohio	P. Leighty, No. 1	534	do.	985	44	445	1,055	1,031	1,056	Gas	Gas, 998 feet.
S. E..	4 Ohio	P. Leighty, No. 5	540	do.	1,012	140	472	1,028	1,031	1,056	20	Gas, 998 feet.
	5 Ohio	P. Leighty, No. 15	513	Buchanan	960	110	447	1,053	1,031	1,056	60	Gas, 1,580 feet. Quit in sand.
	6 Ohio	E. Robins, No. 1	496	Kirkwood.	1,260	23	1,064	436	1,580	1,604	75	Gas, 1,540 feet.
	1 Unknown	H. K. Seed, No. 1	491	Bridgeport.	965	105	469	1,031	1,031	1,031	No record.	No record.
	2 Ohio	E. Gillespie, No. 4	478	Buchanan	1,254	22	758	742	1,540	1,573	Show	Salt water, 1,860 feet. Well abandoned.
S. E..	1 St. Louis	Turner Hrs., No. 2	498	Kirkwood	1,960	15	1,482	18	1,962	2,063	Dry	No record.
	2 St. Louis	Turner Hrs., No. 1	508	Buchanan	1,510	110	1,032	468	1,000	1,000	Dry	No record.
	1 Ohio	R. Ackman, No. 1	480	Kirkwood	1,587	25	1,107	393	1,602	1,810	13	Gas, 1,598 feet. Salt water, 1,615 feet. Well abandoned.
	1 Central Refining Co.	Snyder, No. 2	478	do.	1,586	51	1,108	392	1,586	1,637	90	Gas, 1,598 feet. Salt water, 1,615 feet. Well abandoned.
	2 Associated Producers	Snyder, No. 8	469	Buchanan	1,315	22	1,113	387	1,643	1,643	300	Gas, 1,598 feet. Salt water, 1,615 feet. Well abandoned.
S. W..	3 Associated Producers	Snyder, No. 7	474	Kirkwood-1	1,628	12	1,159	341	1,643	1,643	300	Gas, 1,598 feet. Salt water, 1,615 feet. Well abandoned.
	4 Associated Producers	Snyder, No. 9	469	Kirkwood-2	1,315	22	1,106	394	1,643	1,643	110	Gas, 1,598 feet. Salt water, 1,615 feet. Well abandoned.
	5 Associated Producers	Barnhart, No. 4	467	Kirkwood-1	1,580	15	1,156	344	1,643	1,643	60	Gas, 1,598 feet. Salt water, 1,615 feet. Well abandoned.
	6 Associated Producers	Barnhart, No. 5	460	Kirkwood-2	1,630	22	1,115	385	1,643	1,643	300	Gas, 1,598 feet. Salt water, 1,615 feet. Well abandoned.
	7 Associated Producers	Barnhart, No. 6	458	Stray	1,584	14	1,159	341	1,643	1,643	110	Gas, 1,598 feet. Salt water, 1,615 feet. Well abandoned.





7 Ohio	532	do.	985	451	483	1,047	1,010	1,004	1,016	55 Gas, 1,010 feet.
8 Ohio	545	do.	980	26	447	1,033	1,004	1,004	1,016	20 Gas, 1,000 feet.
9 Ohio	531	do.	981	70	450	1,021	1,011	1,011	1,021	20 Gas, 1,000 feet.
10 Ohio	536	do.	983	41	457	1,043	1,020	1,020	1,034	60 Gas, 1,000 feet.
11 Ohio	539	do.	986	84	447	1,033	1,000	1,000	1,034	Salt water.
		Buchanan	1,300	100	761	739	1,000	1,000	1,034	Gas, 1,000 feet. Quit in sand.
		Kirkwood	1,600	34	1,061	439	1,000	1,000	1,034	45 Gas, 985 feet.
12 Ohio	544	Bridgeport	992	37	448	1,032	1,011	1,011	1,029	120 Gas, 990 feet.
13 Ohio	532	do.	998	32	466	1,024	1,000	1,000	1,035	60 Gas, 990 feet.
14 Ohio	539	do.	999	46	450	1,060	1,010	1,010	1,035	Gas, well abandoned.
15 Ohio	539	do.	975	45	422	1,073	993	993	1,010	60 Gas, 978 feet.
16 Ohio	545	do.	965	68	427	1,073	1,000	1,000	1,017	100 Gas, 990 feet.
17 Ohio	532	do.	959	68	419	1,081	1,000	1,000	1,024	60 Gas, 953 feet.
18 Ohio	534	do.	933	71	421	1,079	980	980	1,027	35 Gas, 943 feet.
19 Ohio	537	do.	948	79	421	1,079	980	980	1,027	35 Gas, 943 feet.
20 Ohio	537	do.	981	42	454	1,046	996	996	1,025	35 Gas, 931 feet. Quit in white sand.
21 Ohio	532	do.	1,005	19	473	1,027	1,012	1,012	1,024	80 Gas, 1,005 feet.
22 Ohio	531	do.	968	25	458	1,042	1,011	1,011	1,014	100 Gas, 1,001 feet.
23 Ohio	526	do.	998	30	472	1,028	1,005	1,005	1,028	30 Gas, 990 feet. Quit in sand.
24 Ohio	521	do.	990	36	469	1,031	991	991	1,026	90 Gas, 990 feet. Quit in sand.
25 Ohio	512	do.	991	16	479	1,021	993	993	1,007	90 Gas, 993 feet.
26 Ohio	508	do.	994	30	483	1,012	997	997	1,026	45 Gas, 1,010 feet.
27 Ohio	508	do.	947	31	452	1,048	948	948	1,007	Salt water.
28 Ohio	495	do.	1,047	113	552	948	948	948	1,007	Salt water.
29 Ohio	495	do.	1,264	28	769	731	1,300	1,300	1,007	Dry.
30 Ohio	495	Bridgeport	959	33	456	1,044	974	974	992	No record.
31 Ohio	506	do.	990	37	464	1,018	985	985	1,027	180 Gas, 975 feet.
32 Ohio	499	do.	971	41	472	1,028	981	981	1,012	65 Gas, 995 feet.
33 Ohio	515	do.	965	37	460	1,050	985	985	1,002	75 Gas, 972 feet.
34 Ohio	518	do.	980	39	462	1,038	980	980	1,019	200 Gas, 985 feet.
35 Ohio	519	do.	964	59	445	1,066	991	991	1,022	80 Gas, 965 feet.
36 Ohio	519	do.	952	50	433	1,067	989	989	1,002	10 Gas, 953 feet.
37 Ohio	514	do.	972	22	438	1,042	979	979	994	75 Gas, 978 feet.
38 Ohio	522	do.	955	85	433	1,067	1,020	1,020	1,030	50 Gas, 1,019 feet.
39 Ohio	526	do.	966	65	440	1,060	1,016	1,016	1,031	80 Gas, 992 feet.
40 Ohio	523	do.	986	45	445	1,035	989	989	1,014	Dry.
41 Ohio	523	do.	987	27	465	1,035	992	992	1,014	60 Gas, 992 feet.
42 Ohio	520	do.	987	46	470	1,030	1,016	1,016	1,051	Salt water, 1,035 feet.
43 Ohio	535	do.	1,005	62	499	1,041	1,028	1,028	1,036	Well abandoned.
44 Ohio	514	do.	973	62	499	1,041	1,028	1,028	1,036	Well abandoned.
45 Ohio	496	do.	975	20	486	1,014	944	944	944	100 Gas, 922 feet.
46 Ohio	496	Buchanan	1,305	40	816	694	1,014	1,014	944	Gas, 1,072 feet.
47 Ohio	496	Kirkwood	1,083	28	1,083	417	1,073	1,073	944	Gas, 1,085 feet.
48 Ohio	496	Tracy	1,080	25	1,191	399	1,102	1,102	944	Gas, 1,085 feet.
49 Ohio	474	McClosky	1,305	5	1,316	194	1,305	1,305	944	1,440 Gas, 1,300 feet.
50 Ohio	474	Bridgeport	927	29	463	1,047	944	944	944	100 Gas, 922 feet.
51 Ohio	479	do.	902	53	423	1,077	944	944	944	100 Gas, 922 feet.

Lawrence County—Dennison Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
36— S. E....	24 (see.....)		Dining, No. 4.....	464 {	Kirkwood-1..... Kirkwood-2..... Kirkwood-3.....	1,565 1,603 1,620	32 12 8	1,101 1,139 1,156	399 361 344	1,566 1,605 1,621	..... ..... 1,629	..... ..... 100	Salt water, 1,582 feet..... ..... .....

Lawrence County—Lawrence Township.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
1— N. W.. S. W..	1 Donnel, Agent..... 1 Gillespie..... 2 Ohio..... 3 Gillespie.....		E. Martin, No. 1..... Stanfield, No. 2..... R. Kirkwood, No. 2..... Stanfield, No. 4.....	445 { 439 440 { 440	Kirkwood..... McCluskey..... Kirkwood..... Bridgeport..... Kirkwood.....	1,597 1,882 1,564 1,000 1,565	11 8 64 100 35	1,152 1,437 1,125 560 1,125	348 63 375 940 375	..... 1,882 1,570 ..... .....	..... 2,000 1,628 ..... 1,610	..... Dry ..... Dry	..... Salt water, 1,882 feet..... ..... Salt water Drilling.....

2	Ohio	T. Gould, No. 16.	484	do.	905	82	421	1,079	959	987	20	Gas, 925 feet.
3	Ohio	T. Gould, No. 14.	416	do.	945	55	429	1,071	980	1,000	15	Gas, 950 feet.
4	Ohio	T. Gould, No. 13.	519	do.	953	77	434	1,066	970	1,030	300	Gas, 960 feet.
5	Ohio	T. Gould, No. 9.	517	do.	989	35	472	1,028	1,000	1,024	100	Gas, 985 feet.
6	Ohio	T. Gould, No. 12.	516	do.	969	61	453	1,047	995	1,030	125	Gas, 985 feet.
7	Ohio	T. Gould, No. 19.	519	do.	975	50	456	1,044	1,587	1,611	200	Salt water, 1,033 feet.
				Kirkwood	1,585	26	1,066	434	1,587	1,611	200	Gas, 1,586 feet. Quit in sand.
8	Ohio	T. Gould, No. 6.	519	Bridgeport.	992	31	473	1,027	997	1,023	200	
9	Ohio	T. Gould, No. 5.	514	do.	975	35	461	1,039	978	1,010	200	
				do.	975	125	461	1,039				Salt water, 1,030 feet.
10	Ohio	T. Gould, No. 18.	514	Buchanan.	1,300	120	786	714				Salt water, 1,310 feet.
				Kirkwood	1,579	86	1,065	435	1,584	1,605	225	Gas, 1,583 feet. Quit in sand.
11	Ohio	T. Gould, No. 11.	513	Bridgeport.	955	40	442	1,058	980	995	75	Gas, 965 feet.
12	Ohio	T. Gould, No. 2.	507	do.	963	38	456	1,044	974	1,001	200	Gas, 965 feet.
				do.	965	135	461	1,039				Salt water, 1,030 feet.
13	Ohio	T. Gould, No. 17.	504	Buchanan.	1,300	110	786	704				Salt water, 1,300 feet.
				Kirkwood	1,562	24	1,059	441	1,572	1,587	175	Gas, 1,570 feet.
14	Ohio	T. Gould, No. 4.	500	Bridgeport.	980	40	460	1,040	965	1,000	150	
15	Ohio	T. Gould, No. 10.	506	do.	959	58	453	1,047	979	1,015	200	Gas, 965 feet.
16	Ohio	T. Gould, No. 15.	492	do.	980	30	488	1,012				
				Kirkwood	1,533	29	1,061	439	1,561	1,582	200	Gas, 1,557 feet.
17	Ohio	T. Gould, No. 3.	492	Bridgeport.	960	40	468	1,032	960	1,000	250	
18	Ohio	W. Gould, No. 1.	487	do.	955	30	468	1,032	970	985	200	
				do.	965	25	479	1,021				
19	Ohio	W. Gould, No. 5.	486	do.	1,544	30	1,058	442	1,556	1,574	150	Gas, 1,558 feet. Quit in sand.
				Kirkwood								
20	Ohio	W. Gould, No. 4.	488	Bridgeport.	942	37	454	1,046	952	979	200	Gas, 952 feet.
				Shallow.	585	95	89	1,411				Gas, 600 feet. 2,000,000 cubic feet daily.
1	Central Refining Co.	Jenner, No. 1.	496	Bridgeport.	925	15	429	1,071				
				do.	955	37	459	1,041				
2	Central Refining Co.	Jenner, No. 14.	496	do.	955	37	459	1,041				
				Kirkwood	1,569	26	1,073	427	1,552	1,606	150	
3	Central Refining Co.	Jenner, No. 3.	483	Bridgeport.	931	59	448	1,052	941	996		Gas, 936 feet.
				do.	940	59	444	1,056	950			
4	Central Refining Co.	Jenner, No. 16.	496	Buchanan.	1,330	35	834	666				
				Kirkwood	1,577	32	1,081	419	1,577	1,618		
5	Central Refining Co.	Jenner, No. 4.	498	Bridgeport.	902	95	404	1,096	940	997		Gas, 905 feet.
6	Central Refining Co.	Jenner, No. 8.	500	do.	920	10	420	1,080	920			
				do.	960	38	460	1,010		998		
7	Central Refining Co.	Jenner, No. 10.	500	Kirkwood	1,583	45	1,093	407	1,605	1,638		
				Bridgeport.	935	25	448	1,052	948			Gas, 939 feet.
8	Central Refining Co.	Jenner, No. 7.	487	do.	972	22	485	1,015		1,000		
				Kirkwood	1,571	39	1,084	416	1,582	1,610		
9	Central Refining Co.	Jenner, No. 9.	487	Bridgeport.	935	48	454	1,046	938		40	
10	Central Refining Co.	Jenner, No. 15.	481	do.	925	70	443	1,057		995		Gas, 932 feet.
11	Central Refining Co.	Jenner, No. 6.	482	Kirkwood	1,551	46	1,069	431	1,565	51,597	65	
12	Central Refining Co.	Jenner, No. 12.	482	Bridgeport.	929	78	445	1,055	939	997		Gas, 935 feet.
13	Central Refining Co.	Jenner, No. 5.	484	do.	1,567	26	1,063	417				Well abandoned.
14	Central Refining Co.	Jenner, No. 11.	484	Kirkwood	1,549	37	1,067	433	1,556	1,600	105	
15	Central Refining Co.	Jenner, No. 13.	482	do.								



S. E. 9—	1	Ohio	Lamott, No. 1	477	Kirkwood	1,616	19	1,139	361	1,616	1,639	70	.....
	2	Ohio	S. N. Cooper, No. 1	468	do	1,608	4	1,138	362	.....	1,802	Dry	.....
	1	Ohio	Propes, No. 2	467	Kirkwood	1,598	22	1,134	366	1,608	1,853	Dry	No sands
	2	Ohio	Propes, No. 1	464	do	1,608	7	1,141	359	.....	1,632	90	Gas, 1,608 feet
N. E.	3	Ohio	J. Griggs, No. 2	467	Bridgeport	1,890	8	1,441	1,059	.....	1,792	Dry	Salt water, 1,640 feet
	4	Ohio	J. Griggs, No. 1	449	Kirkwood	1,455	45	1,008	494	.....	1,636	.....	Abandoned
	1	Ohio	Stivers, No. 1	433	Bridgeport	950	.....	517	983	.....	.....	.....	.....
	2	Ohio	Stivers, No. 2	434	Buchanan	1,325	.....	892	608	.....	.....	75	.....
S. E.	3	Ohio	Umfleet, No. 1	434	Kirkwood	1,564	.....	1,131	369	.....	1,598	.....	.....
	1	Ohio	Stivers, No. 1	433	McClosky	1,780	6	1,356	144	.....	.....	.....	Gas, 1,780 feet
	2	Ohio	Stivers, No. 2	434	Buchanan	1,986	6	1,532	—32	.....	2,007	.....	Salt water, 1,980 feet
	3	Ohio	Umfleet, No. 1	434	Kirkwood	1,250	15	816	694	.....	.....	60	Gas, 1,563 feet
10— N. E.	1	Shaw	Hardacre, No. 4	445	Bridgeport	745	250	270	1,230	.....	.....	.....	Drilling
	2	Ohio	Hardacre, No. 1	475	Kirkwood-1	1,545	30	1,070	430	.....	.....	Show	Salt water, 995 feet
	3	Shaw	Hardacre, No. 3	424	Kirkwood-2	1,605	30	1,130	370	.....	.....	Show	Salt water, 1,575 feet
	4	Shaw	Hardacre, No. 1	421	Tracey	1,685	70	1,210	290	.....	1,772	Dry	Salt water, 1,735 feet
N. W. S. W.	5	Shaw	Hardacre, No. 2	421	Kirkwood	1,525	53	1,101	399	.....	.....	.....	No record
	6	Ohio	J. Seed, No. 5	422	Kirkwood	1,530	48	1,109	391	.....	.....	60	.....
	7	Ohio	J. Seed, No. 6	422	Bridgeport	1,050	50	628	872	.....	.....	.....	.....
	1	Ohio	T. Seed, No. 1	434	Stray	1,415	20	993	607	.....	.....	80	Gas, 1,517 feet
S. E.	2	Ohio	Griggs, No. 7	434	Kirkwood	1,577	13	1,085	405	1,540	1,563	.....	.....
	3	Ohio	Lawson, No. 2	436	Bridgeport	1,490	373	538	962	.....	.....	.....	.....
	4	Ohio	Lawson, No. 1	437	Stray	1,540	65	953	547	.....	.....	170	Gas, 1,519 feet
	1	Ohio	J. Seed, No. 3	436	Kirkwood	1,534	58	1,097	403	1,519	1,588	.....	Gas, 1,578 feet
11— N. E.	2	Ohio	J. Seed, No. 4	435	Buchanan	1,310	85	876	624	.....	.....	.....	No record
	3	Ohio	J. Seed, No. 2	433	Tracey	1,605	28	1,171	329	1,578	1,783	50	Gas, 1,578 feet
	4	Ohio	J. Seed, No. 7	436	Kirkwood	1,506	12	1,069	431	.....	.....	.....	Salt water, 1,850 feet
	5	Ohio	J. Seed, No. 1	437	McClosky	1,711	2	1,274	226	.....	2,007	Dry	.....
N. E.	1	Ohio	E. Kirkwood, No. 1	445	Bridgeport	1,005	125	560	940	.....	.....	.....	Salt water, 1,010 feet
	2	Ohio	M. Kirkwood, No. 4	439	Stray	1,460	60	1,015	485	.....	.....	.....	Salt water, 1,475 feet
	3	Ohio	J. Seed, No. 1	433	Kirkwood	1,568	34	1,123	377	1,580	1,602	175	Gas, 1,580 feet
	4	Ohio	J. Seed, No. 1	436	Tracey	1,616	19	1,183	317	.....	1,639	70	No record

## Lawrence County—Dennison Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
36— N. W.	4	Ohio.....	Ryan, No. 10.....	469 {	Bridgeport.....	940	60	471	1,029	1,575	90	Gas, 1,574 feet.....
					Kirkwood.....	1,569	31	1,100	400	1,600		
					Bridgeport.....	975	15	503	997			
	5	Ohio.....	Ryan, No. 15.....	472 {	Buchanan.....	1,275	100	803	697			
					Kirkwood.....	1,568	23	1,096	404	1,575		Gas, 1,570 feet.....
					Tracey.....	1,676	22	1,204	296	1,685		Gas, 1,680 feet.....
					McClosky.....	1,788	5	1,316	184	1,788	1,650	Gas, 1,788 feet. Flowing well.....
	6	Ohio.....	Ryan, No. 9.....	467	Bridgeport.....	944	31	477	1,023	960	15	
	7	Ohio.....	J. Gould, No. 2.....	464	do.....	929	36	465	1,035	939	27	(Account 2).....
	8	Ohio.....	J. Gould, No. 1.....	463 {	Kirkwood.....	1,560	32	1,097	403	1,565	100	Gas, 1,563 feet (account 2).....
	9	Ohio.....	Withers, No. 4.....	465 {	Bridgeport.....	940	70	515	985			
	10	Ohio.....	Withers, No. 2.....	446	Kirkwood.....	1,569	24	1,104	398	1,572	90	Gas, 1,571 feet.....
8. W.	11	Ohio.....	Withers, No. 5.....	446	do.....	1,543	32	1,097	403	1,545	75	Gas, 1,544 feet.....
	1	Ohio.....	J. Gould (Acct. 1) No. 1.....	462	Kirkwood.....							Drilling.....
	2	Donnell, Agent.....	Buchman, No. 11.....	441		1,539	29	1,077	423	1,549	35	Gas, 1,548 feet.....
	3	Donnell, Agent.....	C. Buchman, No. 3.....	441 {	Bridgeport.....	960		519	981			Drilling.....
	4	Donnell, Agent.....	C. Buchman, No. 4.....	441	Kirkwood.....	1,540	28	1,099	401	1,568	125	
	5	Donnell, Agent.....	C. Buchman, No. 6.....	439	do.....	1,535		1,094	406	1,545	120	
	6	Donnell, Agent.....	C. Buchman, No. 8.....	439	do.....	1,533	27	1,094	406	1,536	240	
	7	Donnell, Agent.....	C. Buchman, No. 10.....	440	do.....	1,536	28	1,096	404	1,540		Drilling.....
	8	Central Refining Co.....	Jenner, No. 10.....	439	Kirkwood.....	1,536	24	1,097	403	1,536	130	
	9	Central Refining Co.....	Jenner, No. 7.....	440 {	Bridgeport.....	926		486	1,014	1,560	Show	Salt water, 1,015 feet.....
	10	Central Refining Co.....	Jenner, No. 2.....	441	Kirkwood.....	1,545	43	1,105	395	1,561		
	11	Central Refining Co.....	Jenner, No. 12.....	445 {	do.....	1,534	63	1,093	407	1,534		
					do.....	1,545	39	1,100	400	1,551	105	
	12	Central Refining Co.....	Jenner, No. 11.....	460 {	Bridgeport.....	925	20	465	1,035	1,551		
					Kirkwood.....	1,559	30	1,099	401	1,545	130	
					Tracey.....	1,478	34	1,174	322	1,647		





Lawrence County—Dennison Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
36— S. E...	24	Geo.....	Dining, No. 4.....	464 {	Kirkwood-1..... Kirkwood-2..... Kirkwood-3.....	1,565 1,603 1,620	32 12 8	1,101 1,139 1,156	399 361 344	1,566 1,605 1,621	..... ..... 100	Salt water, 1,582 feet..... ..... .....

Lawrence County—Lawrence Township.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
1— N. W.. S. W..	1 1 2 3	Donnel, Agent..... Gillespie..... Ohio..... Gillespie.....	E. Martin, No. 1..... Stanfield, No. 2..... R. Kirkwood, No. 2..... Stanfield, No. 4.....	445 { 439 440 { 440	Kirkwood..... McClosky..... Kirkwood..... Bridgeport..... Kirkwood.....	1,597 1,882 1,564 1,000 1,565	11 8 64 100 35	1,152 1,437 1,125 560 1,125	348 63 275 940 376	..... 1,882 1,570 ..... 1,610	..... Dry ..... Dry	..... Salt water, 1,882 feet..... ..... Salt water Drilling.....

S. E.	2—	1	Ohio	Sumner, No. 2.	434	Bridgeport.	1, 000	120	566	934	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
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## Lawrence County—Lawrence Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
13— S. W.	3	Donnel, Agent.....	Irwin, No. 2.....	428	1,503	.....	1,135	365	.....	.....	Dry	Salt water, 1,605 feet.
					1,620	.....	1,262	358	1,580	.....		Black oil.....
					1,705	.....	1,337	368	1,705	1,705		Gas, 1,705 feet. Green oil.
	4	Donnel, Agent.....	Irwin, No. 6.....	431	1,660	75	1,519	661	.....	.....		
	5	Donnel, Agent.....	Irwin, No. 1.....	429	1,270	90	1,339	661	.....	.....	155	Gas, 1,558 feet.
14— N. E.					1,555	25	1,124	576	1,558	1,644	65	
					1,545	.....	1,116	584	1,558	1,570		
	1	Bridgeport.....	R. Kirkwood, No. 2.....	429	948	10	519	981	.....	.....		
					1,532	26	1,103	397	1,534	1,565		
					1,607	60	971	970	.....	.....		
	2	Bridgeport.....	R. Kirkwood, No. 10.....	419	1,055	65	586	914	.....	.....		
					1,263	85	396	624	.....	.....		
					1,630	27	1,111	989	1,634	1,623		
	3	Bridgeport.....	R. Kirkwood, No. 1.....	419	1,030	58	1,16	784	1,643	1,660		
					1,321	10	549	991	.....	.....		
	4	Bridgeport.....	McPherson, No. 1.....	416	1,460	20	1,24	375	1,535	1,550		
	5	Bridgeport.....	R. Kirkwood, No. 4.....	428	1,470	20	1,112	383	1,542	1,562		
					1,773	20	338	1,623	.....	.....		
					1,601	20	428	1,075	.....	.....		
					1,601	20	446	795	.....	.....		Salt water.
					1,660	20	426	773	.....	.....		
					1,170	19	736	765	.....	.....		
	6	Bridgeport.....	R. Kirkwood, No. 7.....	435	1,255	95	330	660	.....	.....		
					1,540	40	1,106	365	1,551	.....		
					1,585	5	1,160	350	.....	.....		
					1,695	10	1,160	340	.....	.....		Salt water.
					1,767	8	1,337	189	.....	1,776	1,200	
	7	Bridgeport.....	R. Kirkwood, No. 5.....	435	1,640	35	635	605	940	.....	Light	Salt water, 975 feet.
					1,280	20	846	483	.....	.....		Salt water, 1,280 feet.
					1,641	20	1,108	394	1,633	1,670		Abandoned.



Lawrence County—Lawrence Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
14— N. W.	5	Ohio.....	W. Gillespie, No. 3.....	477	Buchanan.....	1,240	150	763	737	1,580	30	.....
	6	Ohio.....	W. Gillespie, No. 7.....	457	Kirkwood.....	1,550	50	1,073	427	1,602	25	Gas, 1,580 feet.....
	7	Ohio.....	W. Gillespie, No. 2.....	429	..do.....	1,532	50	1,075	425	1,582	100	.....
	8	Ohio.....	W. Gillespie, No. 8.....	429	..do.....	1,515	57	1,086	414	1,572	25	Gas, 1,530 feet.....
	9	Ohio.....	W. Gillespie, No. 4.....	432	..do.....	1,525	37	1,096	404	1,565	30	Gas, 1,550 feet.....
	10	Ohio.....	W. Gillespie, No. 5.....	430	Buchanan.....	1,240	165	810	690	1,550	100	Gas, 1,523 feet.....
	11	Ohio.....	W. Gillespie, No. 6.....	430	Kirkwood.....	1,510	38	1,080	420	1,548	75	Gas, 1,515 feet.....
	1	Ohio.....	S. Gray, No. 2.....	425	McClosky.....	1,512	45	1,082	418	1,517	40	Salt water, 1,800 feet.....
	2	Ohio.....	S. Gray, No. 4.....	424	Kirkwood.....	1,768	5	1,338	162	1,802	150	.....
	3	Ohio.....	S. Gray, No. 8.....	433	..do.....	1,511	49	1,086	414	1,558	30	Gas, 1,774 feet.....
S. E.	4	Ohio.....	S. Gray, No. 3.....	432	Kirkwood.....	1,500	70	1,076	424	1,570	150	Gas, 1,545 feet.....
	5	Ohio.....	S. Gray, No. 14.....	434	Bridgeport.....	1,545	30	1,112	388	1,775	30	Gas, 1,545 feet.....
	6	Ohio.....	S. Gray, No. 12.....	434	Buchanan.....	1,774	1	1,341	159	1,775	.....	.....
	7	Ohio.....	S. Gray, No. 11.....	424	McClosky.....	1,545	36	1,113	387	1,555	.....	.....
	8	Ohio.....	S. Gray, No. 5.....	423	Bridgeport.....	1,040	85	606	894	.....	.....	.....
	9	Ohio.....	S. Gray, No. 6.....	434	Buchanan.....	1,250	105	816	684	.....	.....	.....
	10	Ohio.....	Chlsterston, No. 2.....	431	Kirkwood.....	1,530	20	1,096	404	1,535	.....	.....
					McClosky.....	1,775	3	1,341	159	1,861	Dry	.....
					Bridgeport.....	925	185	491	1,009	.....	.....	.....
					Buchanan.....	1,230	135	796	704	.....	.....	.....



## Lawrence County—Lawrence Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
15— N. E.	14 Ohio.	Carlson, No. 8.	Carlson, No. 8.	433	Buchanan.	1,304	10	871	629	1,304	87	Well abandoned.
	15 Ohio.	Carlson, No. 6.	Carlson, No. 6.	432	do.	1,300	34	868	632	1,334	107	
	16 Ohio.	Carlson, No. 9.	Carlson, No. 9.	432	Bridgeport.	1,000	110	568	932			
	17 Ohio.	Carlson, No. 7.	Carlson, No. 7.	432	Buchanan.	1,300	40	868	632			
	1 Ohio.	C. Seed, No. 6.	C. Seed, No. 6.	434	Kirkwood.	1,534	26	1,102	398	1,565	5	Gas, 1,538 feet.
	2 Ohio.	C. Seed, No. 5.	C. Seed, No. 5.	436	Buchanan.	1,318	6	886	614	1,324	30	
	3 Ohio.	C. Seed, No. 4.	C. Seed, No. 4.	432	do.	1,299	6	865	635	1,305	160	
	4 Ohio.	C. Seed, No. 3.	C. Seed, No. 3.	437	do.	1,280	10	842	658	1,290	180	
	5 Ohio.	C. Seed, No. 2.	C. Seed, No. 2.	433	Kirkwood-1.	1,539	16	1,101	399	1,539	20	Gas, 1,539 feet.
	6 Ohio.	C. Seed, No. 1.	C. Seed, No. 1.	437	Kirkwood-2.	1,556	6	1,128	372			
N. W.	3 Ohio.	C. Seed, No. 4.	C. Seed, No. 4.	432	Buchanan.	1,268	15	836	664	1,270	250	
	4 Ohio.	C. Seed, No. 3.	C. Seed, No. 3.	433	do.	1,275	13	842	658	1,277	200	
	5 Ohio.	C. Seed, No. 1.	C. Seed, No. 1.	437	do.	1,262	15	825	675	1,277	200	
	6 Ohio.	C. Seed, No. 2.	C. Seed, No. 2.	433	do.	1,280	25	847	653	1,282	200	
	7 Ohio.	Griggs, No. 3.	Griggs, No. 3.	437	do.	1,313	11	876	624	1,314	200	
	8 Ohio.	Griggs, No. 2.	Griggs, No. 2.	447	do.	1,277		830	670			
	9 Ohio.	Griggs, No. 1.	Griggs, No. 1.	456	do.	1,281		825	675	1,297		
	10 Ohio.	Griggs, No. 5.	Griggs, No. 5.	434	do.	1,267	17	853	647	1,280	200	
	11 Ohio.	Griggs, No. 4.	Griggs, No. 4.	438	do.	1,288	14	850	650	1,290	125	
	12 Ohio.	Griggs, No. 6.	Griggs, No. 6.	434	do.	1,320	45	886	614			
S. W.	1 Ohio.	L. Seed, No. 2.	L. Seed, No. 2.	464	Kirkwood.	1,528	51	1,094	406	1,579	100	Gas, 1,540 feet.
	2 Ohio.	L. Seed, No. 4.	L. Seed, No. 4.	458	Buchanan.	1,283	37	819	681	1,320	720	
	3 Ohio.	L. Seed, No. 11.	L. Seed, No. 11.	444	do.	1,264	27	826	674	1,290	150	
	4 Ohio.	L. Seed, No. 13.	L. Seed, No. 13.	470	do.	1,270		826	674	1,309	150	
	5 Ohio.	L. Seed, No. 6.	L. Seed, No. 6.	475	do.	1,251	44	781	719	1,251	150	
	6 Ohio.	L. Seed, No. 12.	L. Seed, No. 12.	470	do.	1,290	31	815	685	1,295	200	
	7 Ohio.	L. Seed, No. 3.	L. Seed, No. 3.	463	do.	1,261	78	791	709	1,265	475	
	8 Ohio.	L. Seed, No. 7.	L. Seed, No. 7.	490	do.	1,282		829	671	1,286	125	
	9 Ohio.	L. Seed, No. 9.	L. Seed, No. 9.	463	do.	1,311	28	821	679	1,315	200	
	10 Ohio.	L. Seed, No. 1.	L. Seed, No. 1.	449	do.	1,300	27	837	663	1,305	175	







No.	Locality	Driller	Depth feet	Remarks
8	Bridgeport.....	R. Kirkwood, No. 9.....	770 950 1,015 1,280 1,530 1,650 1,769 1,527 1,516 1,340 1,558	Bridgeport. Bridgeport-2. Bridgeport-3. Buchanan. Kirkwood. Tracey. McClosky. Kirkwood. do. Stray. Kirkwood.
9	Bridgeport.....	R. Kirkwood, No. 3.....	20 15 30 70 55 15 9 35 32	20 15 30 70 55 15 9 35 32
10	Bridgeport.....	McPherson, No. 2.....	339 519 584 849 1,099 1,219 1,338 1,096 1,098 912 1,130	339 519 584 849 1,099 1,219 1,338 1,096 1,098 912 1,130
11	Busch-Everett.....	Christerson, No. 6.....	.....	.....
12	Busch-Everett.....	Christerson, No. 1 (?).....	.....	.....
13	Busch-Everett.....	Christerson, No. 2.....	.....	.....
14	Busch-Everett.....	Christerson, No. 1 (?).....	.....	.....
15	Busch-Everett.....	Christerson, No. 3.....	.....	.....
16	Busch-Everett.....	Christerson, No. 1.....	.....	.....
17	Ohio.....	Christerson, No. 7.....	.....	.....
18	Ohio.....	Christerson, No. 1.....	.....	.....
19	Guarantee.....	Christerson, No. 1.....	.....	.....
1	Ohio.....	Christerson, No. 9.....	.....	.....
2	Ohio.....	Christerson, No. 6.....	.....	.....
3	Silurian.....	Rogers, No. 1.....	.....	.....
4	Silurian.....	Rogers, No. 5.....	.....	.....
5	Silurian.....	Rogers, No. 6.....	.....	.....
6	Silurian.....	Rogers, No. 4.....	.....	.....
7	Silurian.....	Rogers, No. 3.....	.....	.....
1	Silurian.....	Rogers, No. 2.....	.....	.....
2	Ohio.....	A. Gillespie, No. 1.....	.....	.....
3	Ohio.....	A. Gillespie, No. 3.....	.....	.....
4	Ohio.....	W. Gillespie, No. 1.....	.....	.....

**N. W.:**

**S. W.:**

## Lawrence County—Lawrence Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
14— N. W.	5	Ohio.....	W. Gillespie, No. 3.....	477 {	Buchanan.....	1,240	150	763	737	1,580	30	.....
	6	Ohio.....	W. Gillespie, No. 7.....	457	Kirkwood.....	1,550	50	1,073	427	1,602	25	Gas, 1,560 feet.....
	7	Ohio.....	W. Gillespie, No. 2.....	429	do.....	1,532	50	1,075	425	1,582	100	.....
	8	Ohio.....	W. Gillespie, No. 8.....	429	do.....	1,515	57	1,086	414	1,572	25	Gas, 1,630 feet.....
	9	Ohio.....	W. Gillespie, No. 4.....	432	do.....	1,525	37	1,096	404	1,565	30	Gas, 1,550 feet.....
	10	Ohio.....	W. Gillespie, No. 5.....	430	Buchanan.....	1,628	44	1,096	404	1,550	100	Gas, 1,523 feet.....
	11	Ohio.....	W. Gillespie, No. 6.....	430	Kirkwood.....	1,512	38	1,082	420	1,548	75	Gas, 1,515 feet.....
	1	Ohio.....	S. Gray, No. 2.....	425	McClosky.....	1,768	5	1,338	162	1,802	40	Salt water, 1,800 feet.....
	2	Ohio.....	S. Gray, No. 4.....	424	Kirkwood.....	1,511	49	1,086	414	1,532	150	.....
	3	Ohio.....	S. Gray, No. 8.....	433	do.....	1,500	70	1,076	424	1,540	30	.....
S. E.	4	Ohio.....	S. Gray, No. 3.....	432	do.....	1,545	30	1,112	388	.....	150	Gas, 1,774 feet.....
	5	Ohio.....	S. Gray, No. 14.....	434	McClosky.....	1,774	1	1,341	159	1,775	30	Gas, 1,545 feet.....
	6	Ohio.....	S. Gray, No. 12.....	434	Kirkwood.....	1,545	36	1,113	387	1,581	.....	.....
	7	Ohio.....	S. Gray, No. 11.....	424	Bridgeport.....	1,040	85	606	894	.....	.....	.....
	8	Ohio.....	S. Gray, No. 5.....	423	Buchanan.....	1,250	105	816	684	.....	.....	.....
	9	Ohio.....	S. Gray, No. 6.....	434	Kirkwood.....	1,530	20	1,096	404	1,535	.....	.....
	10	Ohio.....	Christerson, No. 2.....	431	McClosky.....	1,775	3	1,341	159	1,861	.....	.....
					Bridgeport.....	925	185	491	1,009	.....	Dry	.....
					Buchanan.....	1,230	135	796	704	.....	.....	.....
					Kirkwood.....	1,555	40	1,121	379	.....	.....	.....
	7	Ohio.....	S. Gray, No. 11.....	424	McClosky.....	1,772	7	1,338	162	1,775	30	Salt water.....
	8	Ohio.....	S. Gray, No. 5.....	423	Bridgeport.....	925	185	501	999	.....	.....	.....
	9	Ohio.....	S. Gray, No. 6.....	434	Buchanan.....	1,230	130	806	694	.....	.....	.....
	10	Ohio.....	Christerson, No. 2.....	431	Kirkwood.....	1,555	25	1,131	369	1,565	165	.....
					McClosky.....	1,769	4	1,345	155	1,773	.....	Gas, 1,769 feet.....
					Kirkwood.....	1,513	52	1,095	405	1,570	50	.....
					do.....	1,520	58	1,086	414	1,538	45	.....
					Buchanan.....	1,300	90	869	631	1,530	.....	Salt water, 1,300 feet.....
					Kirkwood.....	1,513	39	1,082	414	.....	.....	.....
					Tracey.....	1,636	5	1,205	205	1,706	50	.....

Lawrence County—Lukin Township.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
32 N. E.	1 Ohio		J. Crane, No. 1	480	.....	1,534	20	1,054	446	.....	1,571	Dry	.....
					Bridgeport.....	830	42	.....	.....	.....	.....	.....	Salt water.....
					Bridgeport-2.....	940	5	.....	.....	940	.....	Show	.....
8. E.	1 Snowden Bros.		Laughlin, No. 1	469	Bridgeport-3.....	1,304	11	.....	.....	.....	.....	.....	.....
					Stray.....	1,506	14	.....	.....	1,506	.....	.....	.....
					Buchanan-1.....	1,614	118	.....	.....	1,705	.....	.....	.....
					Buchanan-2.....	1,750	26	.....	.....	.....	.....	.....	Salt water, 1,775 feet.....
					Kirkwood.....	1,985	15	.....	.....	1,985	.....	.....	.....
					Stray.....	2,152	4	.....	.....	2,152	2,165	.....	.....

## Lawrence County—Lawrence Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
15— N. E.	14 Ohio.....	Carlson, No. 8.....	433	Buchanan.....	1,304	10	871	629	1,304	1,314	87	Well abandoned.....
	15 Ohio.....	Carlson, No. 6.....	432	do.....	1,300	34	868	632	1,311	1,334	107	Gas, 1,538 feet.....
N. W.	16 Ohio.....	Carlson, No. 9.....	432	Bridgeport.....	1,000	110	568	932	.....	.....	.....	.....
	17 Ohio.....	Carlson, No. 7.....	432	Buchanan.....	1,300	40	868	632	1,536	1,565	5	Gas, 1,538 feet.....
	1 Ohio.....	C. Seed, No. 6.....	434	Kirkwood.....	1,534	26	1,102	614	1,318	1,324	30	.....
	2 Ohio.....	C. Seed, No. 5.....	436	Buchanan.....	1,299	6	865	635	1,302	1,305	160	.....
	3 Ohio.....	C. Seed, No. 4.....	432	do.....	1,280	10	842	658	1,280	.....	180	.....
	4 Ohio.....	C. Seed, No. 3.....	433	Kirkwood-1.....	1,539	16	1,101	399	1,539	.....	20	Gas, 1,539 feet.....
	5 Ohio.....	C. Seed, No. 1.....	437	Kirkwood-2.....	1,556	6	1,128	372	.....	1,558	.....	.....
	6 Ohio.....	C. Seed, No. 2.....	433	Buchanan.....	1,275	15	836	664	1,270	1,283	250	.....
	7 Ohio.....	Griggs, No. 3.....	437	do.....	1,262	13	842	653	1,277	1,288	200	.....
	8 Ohio.....	Griggs, No. 2.....	447	do.....	1,280	15	825	675	.....	1,277	200	.....
S. W.	9 Ohio.....	Griggs, No. 1.....	456	do.....	1,313	25	847	653	1,282	1,305	200	.....
	10 Ohio.....	Griggs, No. 5.....	434	do.....	1,277	11	876	624	1,314	1,324	200	.....
	11 Ohio.....	Griggs, No. 4.....	438	do.....	1,281	.....	830	670	.....	1,298	.....	.....
	12 Ohio.....	Griggs, No. 6.....	434	do.....	1,287	17	825	675	.....	1,307	.....	.....
	1 Ohio.....	L. Seed, No. 2.....	464	do.....	1,288	14	853	647	1,290	1,304	200	.....
	2 Ohio.....	L. Seed, No. 4.....	458	Kirkwood.....	1,320	45	886	614	1,290	1,302	125	.....
	3 Ohio.....	L. Seed, No. 11.....	444	Buchanan.....	1,528	51	1,094	406	1,546	1,579	100	Gas, 1,540 feet.....
	4 Ohio.....	L. Seed, No. 13.....	470	do.....	1,283	37	819	681	1,288	1,320	720	.....
	5 Ohio.....	L. Seed, No. 6.....	475	do.....	1,284	27	826	674	1,290	1,311	150	.....
	6 Ohio.....	L. Seed, No. 12.....	470	do.....	1,270	44	826	674	1,309	1,317	150	.....
	7 Ohio.....	L. Seed, No. 3.....	453	do.....	1,251	.....	781	719	1,251	1,295	150	.....
	8 Ohio.....	L. Seed, No. 7.....	490	do.....	1,311	28	821	679	1,315	1,339	200	.....
	9 Ohio.....	L. Seed, No. 9.....	463	do.....	1,300	27	837	663	1,305	1,325	175	.....
	10 Ohio.....	L. Seed, No. 1.....	449	do.....	1,307	27	858	642	1,310	1,334	125	.....
				do.....	1,290	31	815	685	1,295	1,321	200	.....

11 Big Four.	E Seed, No. 3.	455	1,300	27	845	555	1,357	.....
12 Big Four.	E Seed, No. 8.	470	1,303	27	833	628	1,315	.....
			1,318	94	872	628	1,315	.....
			1,008	10	603	438	.....	.....
13 Big Four.	E Seed, No. 16.	446	1,008	28	1,163	338	1,505	.....
			1,906	140	1,361	140	2,030	Gas, 1,305 feet.
14 Big Four.	E Seed, No. 2.	446	1,320	21	894	646	1,351	Abandoned.
15 Big Four.	E Seed, No. 8.	448	1,320	28	854	646	.....	.....
16 Big Four.	E Seed, No. 8.	473	1,305	39	853	697	.....	.....
17 Ohio.	G Gillespie, No. 2.	446	1,298	.....	853	647	1,319	.....
18 Ohio.	G Gillespie, No. 1.	438	1,298	.....	850	550	1,293	200
19 Ohio.	G Gillespie, No. 1.	441	1,298	.....	850	550	1,293	.....
20 Ohio.	G Gillespie, No. 6.	432	1,298	.....	850	550	1,293	.....
21 Ohio.	G Gillespie, No. 4.	441	1,298	.....	850	550	1,293	.....
22 Ohio.	W Gillespie, Lot No. 1.	438	1,298	.....	850	550	1,293	.....
23 Ohio.	G Gillespie, No. 3.	438	1,298	.....	850	550	1,293	.....
24 Ohio.	G Gillespie, No. 7.	428	1,298	.....	850	550	1,293	.....
1 Ohio.	G Gillespie, No. 8.	446	1,298	.....	850	550	1,293	.....
2 Ohio.	G Gillespie, No. 8.	446	1,298	.....	850	550	1,293	.....
3 Ohio.	G Gillespie, No. 2.	441	1,298	.....	850	550	1,293	.....
4 Ohio.	G Gillespie, No. 2.	441	1,298	.....	850	550	1,293	.....
5 Ohio.	G Gillespie, No. 2.	441	1,298	.....	850	550	1,293	.....
6 Ohio.	G Gillespie, No. 3.	438	1,298	.....	850	550	1,293	.....
7 Ohio.	G Gillespie, No. 2.	431	1,298	.....	850	550	1,293	.....
8 Ohio.	C Seed, No. 3.	427	1,298	.....	850	550	1,293	.....
9 Ohio.	C Seed, No. 4.	430	1,298	.....	850	550	1,293	.....
10 Ohio.	C Gillespie, No. 3.	432	1,298	.....	850	550	1,293	.....
11 Ohio.	C Gillespie, No. 4.	440	1,298	.....	850	550	1,293	.....
12 Ohio.	C Gillespie, No. 1.	422	1,298	.....	850	550	1,293	.....
13 Ohio.	C Gillespie, No. 2.	427	1,298	.....	850	550	1,293	.....
14 Ohio.	C Seed, No. 5.	428	1,298	.....	850	550	1,293	.....
15 Ohio.	C Seed, No. 2.	425	1,298	.....	850	550	1,293	.....
16 Ohio.	C Seed, No. 1.	421	1,298	.....	850	550	1,293	.....
17 Ohio.	W Gillespie, No. 9.	430	1,298	.....	850	550	1,293	.....
1 Ohio.	W Gillespie, No. 6.	440	1,298	.....	850	550	1,293	.....
2 Ohio.	W Gillespie, No. 6.	440	1,298	.....	850	550	1,293	.....
3 Ohio.	W Gillespie, No. 1.	446	1,298	.....	850	550	1,293	.....
4 Ohio.	W Gillespie, No. 4.	446	1,298	.....	850	550	1,293	.....
5 Ohio.	R Gillespie, No. 12.	464	1,351	23	887	613	1,374	Salt water, 1,356 feet.
6 Ohio.	R Gillespie, No. 2.	472	1,351	23	887	613	1,374	Well abandoned.
7 Ohio.	R Gillespie, No. 1.	464	1,351	23	887	613	1,374	Well abandoned.
8 Ohio.	R Gillespie, No. 3.	464	1,351	23	887	613	1,374	Well abandoned.
9 Ohio.	R Gillespie, No. 3.	464	1,351	23	887	613	1,374	Well abandoned.
10 Ohio.	R Gillespie, No. 7.	443	1,351	23	887	613	1,374	Well abandoned.
11 Ohio.	R Gillespie, No. 4.	446	1,351	23	887	613	1,374	Well abandoned.

## Lawrence County—Lawrence Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
16— N. E.	12	Ohio.....	R. Gillespie, No. 14.....	441	Buchanan.....	1,296	14	855	645	1,298	250	.....
	13	Ohio.....	R. Gillespie, No. 13.....	439	do.....	1,300	15	861	639	1,304	200	.....
	14	Ohio.....	R. Gillespie, No. 9.....	443	do.....	1,306	20	863	637	1,310	150	.....
	1	Ohio.....	W. Gillespie, No. 3.....	460	do.....	1,357	15	897	603	.....	.....	Salt water, 1,360 feet.
	2	Ohio.....	W. Gillespie, No. 2.....	470	Kirkwood.....	1,520	130	1,080	440	.....	.....	Well abandoned.
	3	Ohio.....	Lewis, No. 7.....	480	Buchanan.....	1,348	18	808	632	1,352	200	.....
	4	Ohio.....	Lewis, No. 5.....	452	Kirkwood.....	1,512	29	1,060	440	1,524	200	.....
	5	Ohio.....	C. Gillespie Lot, No. 1.....	445	do.....	1,506	22	1,061	439	1,507	100	Gas, 1,510 feet.
	6	Ohio.....	Lewis, No. 6.....	465	Buchanan.....	1,312	.....	847	653	1,315	175	.....
	7	Ohio.....	Lewis, No. 10.....	480	do.....	1,335	11	855	645	1,337	250	.....
	8	Ohio.....	Lewis, No. 3.....	489	do.....	1,345	.....	856	644	1,350	200	.....
	9	Ohio.....	Lewis, No. 4.....	481	do.....	1,307	20	826	674	1,308	200	.....
	10	Ohio.....	Lewis, No. 9.....	476	do.....	1,305	41	829	671	1,315	300	.....
	11	Ohio.....	Lewis, No. 2.....	486	do.....	1,325	95	834	666	1,322	250	.....
	12	Ohio.....	Lewis, No. 8.....	489	do.....	1,530	43	836	664	1,349	100	.....
	13	Ohio.....	Lewis, No. 1.....	489	Kirkwood.....	1,340	19	1,041	459	.....	.....	Salt water, 1,665 feet.
S. W.	14	Ohio.....	R. Gillespie, No. 3.....	485	Buchanan.....	1,358	.....	851	649	.....	75	Well abandoned.
	15	Ohio.....	R. Gillespie, No. 8.....	475	do.....	1,340	.....	873	627	.....	.....	.....
	16	Ohio.....	R. Gillespie, No. 11.....	467	do.....	1,350	11	865	635	1,345	250	.....
	17	Ohio.....	R. Gillespie, No. 10.....	483	do.....	1,340	22	883	617	1,353	60	.....
	1	Ohio.....	C. Seed, No. 4.....	497	do.....	1,331	24	857	643	1,352	105	.....
	2	Ohio.....	C. Seed, No. 1.....	482	do.....	1,320	47	834	666	1,335	50	.....
	3	Ohio.....	C. Seed, No. 10.....	493	do.....	1,330	50	838	662	1,357	150	Salt water, 1,367 feet.
	4	Ohio.....	C. Seed, No. 2.....	483	do.....	1,348	14	837	663	1,340	75	.....
	5	Ohio.....	C. Seed, No. 3.....	485	do.....	1,347	20	865	635	1,350	180	.....
	6	Ohio.....	C. Seed, No. 5.....	490	do.....	1,347	.....	862	638	1,357	125	Salt water, 1,367 feet.
	7	Ohio.....	C. Seed, No. 6.....	504	do.....	1,346	.....	856	644	1,357	300	.....
	8	Ohio.....	C. Seed, No. 7.....	505	do.....	1,330	.....	834	646	1,347	50	.....
					do.....	1,341	49	836	641	1,370	150	.....

4	Ohio.....	Racop, No. 1.....	455	do.....	1, 620	9	1, 165	335	1, 760	Dry	Salt water, 1,759 feet.....
				Bridgeport.....	985	15	515	985			
5	Snowden Bros.....	Armitage, No. 1.....	450	do.....	1, 085	15	635	865			Salt water, 1,100 feet.....
				Buchanan-1.....	1, 180	26	730	770			
				Buchanan-2.....	1, 220	15	770	730			
				Stray.....	1, 395	5	945	555			
				Kirkwood.....	1, 570	26	1, 120	380	1, 606	100	
				Bridgeport.....	844	26	399	1, 101			
				do.....	924	12	479	1, 021			
				do.....	951	13	506	994			
6	Snowden Bros.....	Armitage, No. 2.....	445	Buchanan.....	1, 140	30	695	805			Hole full of water, 1,140 feet.....
				"Gas".....	1, 505	6	1, 060	440		Show	
				Kirkwood.....	1, 535	30	1, 090	410			
				Tracey.....	1, 578	5	1, 133	367	1, 610		Lime and sand.....
				Bridgeport.....	858	17	419	1, 081			
				do.....	910	21	471	1, 029			Salt water, 931 feet.....
				do.....	960	120	521	979			
				Buchanan-1.....	1, 150	40	711	789			
1	Snowden Bros.....	Piper, No. 10.....	439	Buchanan-2.....	1, 260	10	821	679			
				"Gas".....	1, 450	25	1, 011	489		Show	
				Kirkwood-1.....	1, 481	20	1, 042	458	1, 481		
				Kirkwood-2.....	1, 511	19	1, 072	428			
				Tracey-1.....	1, 591	29	1, 152	348			
2	Snowden Bros.....	Piper, No. 3.....	437	Tracey-2.....	1, 630	25	1, 191	309	1, 708		
				Kirkwood.....	1, 505	8	1, 068	432		Gas	600 pounds pressure, 7,000-000 cubic feet gas.
3	Ohio.....	Stoltz, No. 2.....	435	do.....	1, 463		1, 028	472	1, 463	1, 533	Gas, 1,507 feet. Abandoned.
				do.....	1, 439	40	1, 004	496			
4	Ohio.....	Stoltz, No. 4.....	435	Tracey-1.....	1, 588	16	1, 153	347			
				Tracey-2.....	1, 633	20	1, 198	302	2, 002	Dry	
5	Ohio.....	Stoltz, No. 3.....	436	Kirkwood-1.....	1, 444	16	1, 008	492			
				Kirkwood-2.....	1, 475		1, 039	461		Gas	Gas, 1,480 feet.
6	Ohio.....	Stoltz, No. 1.....	437	Kirkwood.....	1, 460	14	1, 023	477	1, 463	30	
				do.....	1, 461	30	1, 026	474	1, 470		Gas, 1,461 feet.
7	Ohio.....	Stoltz, No. 5.....	435	Tracey-1.....	1, 586	14	1, 151	349			
				Tracey-2.....	1, 630	19	1, 195	305	1, 635	1, 651	90
				Buchanan.....	1, 260		820	690			Salt water, 1,260 to 1,280 feet.
1	Ohio.....	Haines, No. 1.....	440	Stray.....	1, 580	8	1, 140	360			
				do.....	1, 630	8	1, 190	310			
				Kirkwood.....	1, 730		1, 290	210	1, 833	Dry	Salt water, 1,730 to 1,745 feet.
1	Ohio.....	M. Martin, No. 2.....	434	Tracey.....	1, 587		1, 153	347	1, 602	1, 616	
2	Ohio.....	R. Hardacre, No. 1.....	436	do.....	1, 596	10	1, 160	340			
				McClosky.....	1, 660	13	1, 224	276	1, 666	1, 673	200
				"Gas".....	1, 375	5	939	561			
3	Ohio.....	R. Hardacre, No. 7.....	436	Kirkwood.....	1, 457	5	1, 021	479			
				Tracey.....	1, 575	55	1, 139	361	1, 575	1, 658	55



## Lawrence County—Lawrence Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
33— N. W. S. W.	1	Bridgeport.	Eshelman, No. 2.	475	Kirkwood.	1,415	85	940	560	.....	125	.....
	2	Bridgeport.	Eshelman, No. 1.	464	..do.	1,477	15	1,013	487	.....	200	.....
	1	Ohio.	Middaugh, No. 2.	457	..do.	1,451	19	994	506	1,451	75	Gas, 1,451 feet.
	2	Ohio.	Middaugh, No. 5.	454	Bridgeport.	896	7	442	1,058	896	100	.....
	3	Ohio.	Middaugh, No. 1.	456	Bridgeport.	920	14	466	1,034	.....	.....	Salt water, 976 feet.
	4	Ohio.	Middaugh, No. 3.	453	Kirkwood.	1,432	42	976	524	1,460	190	.....
	5	Ohio.	Middaugh, No. 6.	448	..do.	1,443	45	990	510	1,443	75	.....
	6	Ohio.	Middaugh, No. 4.	458	Kirkwood-1.	1,440	6	992	508	1,440	.....	.....
	7	Ohio.	W. Stoltz, No. 1.	465	Kirkwood-2.	1,463	26	1,015	485	1,463	60	.....
	8	Ohio.	W. Stoltz, No. 2.	480	Kirkwood.	1,507	.....	1,049	451	1,508	60	.....
					Bridgeport.	1,070	11	605	895	1,832	Dry	.....
					..do.	937	439	457	1,043	2,003	Dry	Salt water, 1,224 feet.

Lawrence County—Lukin Township.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
32 N. E.	1 Ohio		J. Crane, No. 1	480	Bridgeport	1,534	20	1,054	446		1,571	Dry	.....
					Bridgeport-2	830	42					Show	Salt water
					Bridgeport-3	940	5			940			.....
S. E.	1 Snowden Bros.		Laughlin, No. 1	469	Stray	1,304	11						.....
					Buchanan-1	1,506	14			1,506			.....
					Buchanan-2	1,614	118			1,705			.....
					Kirkwood	1,750	25						Salt water, 1,775 feet
					Stray	1,985	15			1,985			.....
						2,152	4			2,152	2,165		.....



[illegible]

**Lawrence County—Petty Township—Continued.**

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
1— S. E.—	7	Ohio.....	R. Judy, No. 4.....	436 {	"Gas".....	1,312	8	876	624	.....	.....	.....	Salt water, 1,660 to 1,670 feet.
	8	Ohio.....	R. Judy, No. 5.....	436 {	McClosky.....	1,660	10	1,224	276	1,700	Dry	.....	Well abandoned.
	9	Ohio.....	M. Martin, No. 1.....	434 {	Kirkwood.....	1,408	5	972	528	1,408	.....	.....	Gas, 1,408 to 1,413 feet.
	10	Ohio.....	M. Martin, No. 3.....	434 {	Tracy.....	1,565	10	1,129	371	1,565	10	.....	.....
	11	Ohio.....	M. Martin, No. 4.....	434 {	"Gas".....	1,330	13	986	604	.....	.....	.....	.....
2— N. E.—	1	Ohio.....	Poland, No. 1.....	433 {	McClosky.....	1,840	45	1,206	294	.....	.....	.....	Black oil.
	2	Ohio.....	Poland, No. 2.....	423 {	"Gas".....	1,358	.....	924	576	.....	.....	.....	.....
	3	Ohio.....	Poland, No. 3.....	435 {	Tracy.....	1,590	1,600	1,156	344	.....	.....	.....	.....
	4	Snowden Bros.	Piper, No. 8.....	435 {	"Gas".....	1,300	20	886	634	.....	.....	.....	.....
	5	Ohio.....	D. Stoltz, No. 6.....	433 {	Kirkwood.....	1,425	15	991	509	.....	.....	.....	.....
N. W.—	6	Ohio.....	Waggoner, No. 5.....	435 {	McClosky.....	1,662	10	1,228	272	1,665	1,674	25	.....
	7	Ohio.....	Waggoner, No. 1.....	438 {	"Gas".....	1,360	10	927	573	.....	.....	.....	.....
	1	Ohio.....	Rigall, No. 1.....	450 {	Kirkwood-1.....	1,386	8	953	547	.....	.....	.....	.....
	2	Ohio.....	S. Jennings, No. 1.....	436 {	Kirkwood-2.....	1,470	30	1,037	463	1,473	1,507	50	Gas, 1,470 feet.
	3	Ohio.....	Waggoner, No. 2.....	440 {	Kirkwood-1.....	1,433	13	1,000	500	.....	.....	.....	Gas, 1,497 to 1,513 feet.
S. W.—	4	Ohio.....	Waggoner, No. 3.....	446 {	Kirkwood-2.....	1,497	16	1,064	436	.....	.....	.....	4,600,000 cubic feet daily.
	5	Ohio.....	Waggoner, No. 4.....	450 {	"Gas".....	.....	.....	.....	.....	.....	.....	.....	Drilling.
	6	Ohio.....	Waggoner, No. 5.....	435 {	McClosky.....	1,649	11	1,216	284	1,649	1,661	Gas	Gas well. No record.
	7	Ohio.....	Waggoner, No. 1.....	438 {	Kirkwood-1.....	1,419	21	984	516	.....	.....	20	Gas, 1,450 to 1,475 feet.
	8	Ohio.....	Waggoner, No. 2.....	440 {	McClosky.....	1,485	15	1,050	450	.....	.....	.....	Gas, 1,450 to 1,475 feet.
S. W.—	9	Ohio.....	Waggoner, No. 3.....	446 {	Kirkwood-2.....	1,650	18	1,215	285	.....	.....	.....	2,500,000 cubic feet daily.
	10	Ohio.....	Waggoner, No. 4.....	450 {	McClosky.....	1,440	34	1,002	498	1,442	.....	.....	Gas, 1,442 feet.
	11	Ohio.....	Waggoner, No. 5.....	436 {	do.....	1,546	4	1,096	404	.....	.....	.....	Gas, 1,546 to 1,550 feet.
	12	Ohio.....	Waggoner, No. 6.....	436 {	do.....	1,582	18	1,146	354	.....	.....	.....	Gas, 1,546 to 1,550 feet.
	13	Ohio.....	Waggoner, No. 7.....	440 {	Kirkwood-1.....	1,500	10	1,060	440	.....	.....	.....	Water, 1,583 to 1,600 feet.
S. W.—	14	Ohio.....	Waggoner, No. 8.....	446 {	Kirkwood-2.....	1,548	10	1,108	392	1,548	1,561	30	.....
	15	Ohio.....	Waggoner, No. 9.....	446 {	Tracy.....	1,582	10	1,137	363	1,582	1,600	30	.....
	16	Ohio.....	Waggoner, No. 10.....	450 {	Kirkwood.....	1,682	20	1,132	308	1,682	1,700	210	.....
	17	Ohio.....	Waggoner, No. 11.....	450 {	Kirkwood.....	1,682	20	1,132	308	1,682	1,700	210	.....
	18	Ohio.....	Waggoner, No. 12.....	450 {	Kirkwood.....	1,682	20	1,132	308	1,682	1,700	210	.....



## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
6— S. W.—	4	Ohio.....	R. Hardacre, No. 4.....	435 {	Kirkwood.....	1,425	22	990	510	.....	.....	.....	.....
					Tracey.....	1,598	8	1,163	337	.....	.....	.....	.....
					McClosky.....	1,625	11	1,190	310	.....	1,642	30	.....
					.....	.....	.....	.....	.....	.....	.....	.....	.....
7— N. E.—	1	Ohio.....	J. Bolles, No. 3.....	434 {	Tracey.....	1,609	11	1,175	325	.....	.....	.....	.....
					McClosky.....	1,700	20	1,266	234	1,720	1,777	20	.....
					do.....	1,665	26	1,231	269	1,675	1,700	30	.....
					Kirkwood.....	1,420	10	996	514	.....	.....	.....	.....
N. W.—	1	Ohio.....	H. A. Hardacre, No. 4.....	434 {	Tracey.....	1,525	5	1,091	409	.....	.....	.....	Gas, 1,528 feet.....
					McClosky.....	1,632	12	1,198	302	1,633	1,654	160	.....
					do.....	1,604	11	1,170	330	1,604	1,640	60	.....
					"Gas".....	1,343	15	907	593	1,349	.....	75	.....
					Kirkwood.....	1,366	24	930	570	.....	.....	.....	.....
					do.....	1,370	40	934	566	.....	1,425	.....	.....
					"Gas".....	1,335	20	900	600	1,380	1,422	150	.....
					McClosky.....	1,580	12	1,145	355	1,580	1,633	150	.....
					Kirkwood.....	1,385	17	951	549	.....	1,422	.....	.....
					do.....	1,385	19	951	549	.....	.....	.....	.....
					McClosky.....	1,578	.....	1,144	356	1,616	1,664	.....	.....
					Kirkwood.....	1,377	.....	943	557	1,400	1,400	.....	.....
					"Gas".....	1,318	12	885	615	1,320	1,339	40	.....
					Kirkwood-1.....	1,380	26	945	555	1,406	.....	.....	.....
					Kirkwood-2.....	1,420	10	985	515	.....	.....	.....	Gas, 1,515 feet.....
					Tracey.....	1,515	.....	1,080	420	.....	1,535	Gas	.....
S. W.—	11	Ohio.....	S. E. Smith, No. 2.....	435 {	Kirkwood.....	1,373	9	933	562	.....	2,010	Dry	.....
					"Gas".....	1,303	12	870	630	1,305	.....	45	.....
					Kirkwood.....	1,377	23	943	557	1,377	1,400	200	.....
					do.....	1,363	32	929	571	1,390	1,400	175	.....
					"Gas".....	1,290	10	856	644	1,290	.....	85	.....
					Kirkwood.....	1,355	5	921	579	.....	1,363	.....	.....
S. W.—	6	Ohio.....	A. Applegate, No. 12.....	435 {	do.....	1,350	30	915	583	1,350	1,360	260	.....

6	Ohio.....	A. Applegate, No. 6.....	444	1,266	14	652	648	1,266	1,356	50	
7	Ohio.....	A. Applegate, No. 13.....	445	1,328	611	1,328	1,328	1,328	1,328	115	
8	Ohio.....	A. Applegate, No. 7.....	444	1,570	26	902	596	1,328	1,328	115	
9	Ohio.....	A. Applegate, No. 3.....	434	1,008	44	1,174	326	1,008	1,008	158	
				1,267	20	863	637	1,267	1,267		
				1,486		1,031	431	1,486	1,486		
				1,580		1,456	1,044	1,580	1,580		
10	Shaffer & Smathers.....	E. Wiswall, No. 2.....	434	1,270		536	664	1,270	1,270		
				1,302		688	632	1,302	1,302		
				1,600		1,076	436	1,600	1,600		
				1,677	17	143	357	1,677	1,677		
				1,566	16	151	330	1,566	1,566		
				1,283	10	649	651	1,283	1,283		
11	Shaffer & Smathers.....	E. Wiswall, No. 9.....	434	1,335	8	934	386	1,335	1,335		
				1,613	7	1,031	390	1,613	1,613		
				1,613	10	1,178	323	1,613	1,613		
				1,603		1,460	1,040	1,603	1,603		
12	Shaffer & Smathers.....	E. Wiswall, No. 3.....	435	1,408	26	970	530	1,408	1,408		
				1,617	15	1,052	418	1,617	1,617		
				1,677	17	1,162	338	1,677	1,677		
13	Shaffer & Smathers.....	E. Wiswall, No. 1.....	435	1,355	8	986	361	1,355	1,355		
14	Shaffer & Smathers.....	E. Wiswall, No. 7.....	435	1,360	19	913	483	1,360	1,360		
15	Shaffer & Smathers.....	E. Wiswall, No. 8.....	435	1,363	23	933	472	1,363	1,363		
16	Shaffer & Smathers.....	E. Wiswall, No. 5.....	435	1,370	26	933	460	1,370	1,370		
				1,370	10	876	624	1,370	1,370		
17	Shaffer & Smathers.....	E. Wiswall, No. 6.....	434	1,364	23	948	531	1,364	1,364		
18	Shaffer & Smathers.....	E. Wiswall, No. 6.....	435	1,405	22	970	530	1,405	1,405		
				1,467	16	1,052	408	1,467	1,467		
				1,503	6	1,048	1,044	1,503	1,503		
				1,311	7	877	623	1,311	1,311		
				1,350		951	549	1,350	1,350		
19	Shaffer & Smathers.....	J. A. Wiswall, No. 2.....	434	1,470	8	1,036	464	1,470	1,470		
				1,604	26	1,170	330	1,604	1,604		
20	Padon.....	J. A. Wiswall, No. 1.....	434	1,490	11	1,065	445	1,490	1,490		
21	Shaffer & Smathers.....	J. A. Wiswall, No. 3.....	435	1,570	13	1,238	368	1,570	1,570		
				1,460	8	916	635	1,460	1,460		
				1,477	10	982	518	1,477	1,477		
22	Shaffer & Smathers.....	J. A. Wiswall, No. 4.....	435	1,437	4	873	537	1,437	1,437		

3.3



## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
11—													
N. E.	1	Snowden Bros.	Piper, No. 11.	435	Bridgeport.	880	90	425	1,075				Salt water, 900 to 920 feet.
					do.	955	65	520	980				Salt water, 1,000 to 1,020 feet.
					Stray.	1,225	10	700	710				
					do.	1,237	38	802	698				
					do.	1,373	12	938	562	1,380		Show	
					"Gas".	1,425	25	980	510	1,430			
					Kirkwood.	1,485	20	1,050	450				
					Tracey.	1,535	5	1,100	400				
					McClosky.	1,595	28	1,160	340		1,670		Gas, 1,612 feet, "green" oil sand.
					Bridgeport.	890		445	1,055				
S. E.	2	Snowden Bros.	Piper, No. 2.	445	"Gas".	1,420	16	975	525				
					Kirkwood.	1,478	38	1,033	467				
					McClosky.	1,607	63	1,162	338			60	
					Tracey.	1,545	15	1,097	403	1,550		40	Gas, 1,545 feet. salt water, 1,560 feet.
	1	Ohio.	I. B. Smith, No. 1.	448	McClosky.	1,616	8	1,169	332				
	2	Ohio.	I. B. Smith, No. 2.	478	Tracey.	1,580	20	1,102	398	1,584	1,617	110	Gas, 1,584 to 1,600 feet.
	3	Ohio.	I. B. Smith, No. 3.	467	McClosky.	1,655	20	1,188	312	1,655	1,690	25	Gas, 1,655 feet.
	4	McAuliff.	Lot.	460									No record.
	5	Haywood.	M. Smith, No. 1.	468	Stray.	1,290		822	678				No upper sands.
					do.	1,820		1,352	148		1,825	Dry	Salt water, 1,290 and 1,820 feet.
	6	McAuliff.	J. Angle, No. 1.	486								Dry	No record.
	7	Ohio.	E. Heck, No. 1.	485	McClosky.	1,737	23	1,252	248	1,740	1,813	25	Gas, 1,739 feet.
	8	Ohio.	Cessna, No. 3.	476	do.	1,695	15	1,219	251	1,675	1,735	25	
	9	Ohio.	Cessna, No. 1.	442	Kirkwood.	1,489	11	1,047	453	1,495		25	
	10	Ohio.	Cessna, No. 2.	460	McClosky.	1,600	20	1,200	300	1,670	1,688	75	
	11	Ohio.	Cessna, No. 4.	467	Bridgeport.	1,010	50	543	957				
					McClosky.	1,671	11	1,204	206	1,671	1,691	28	Gas and oil, 1,671 feet.

12 Ohio.	C. Aker, No. 3.	461	1,015	105	551	946	1,664	1,683	00 Gas, 1,665 to 1,680 feet.
13 Ohio.	A. Westall, No. 9.	463	1,010	85	1,547	953	1,640	1,663	20 Gas, 1,610 to 1,660 feet.
14 Ohio.	C. Aker, No. 2.	465	1,506	69	1,123	368	1,650	1,705	28
15 Ohio.	C. Aker, No. 1.	441	1,480	5	1,025	475	1,650	1,705	70
16 Ohio.	A. Westall, No. 2.	448	1,480	12	1,050	305	1,650	1,705	Gas, 1,405 feet.
1 Ohio.	H. Hardacre, No. 5.	426	1,406	8	1,012	488	1,479	1,490	40
2 Ohio.	H. Hardacre, No. 1.	434	1,568	10	1,126	371	1,505	1,640	65
3 Ohio.	R. M. Hardacre, No. 1.	434	1,612	6	1,176	324	1,545	1,640	Gas, 1,418 feet.
4 Ohio.	R. Hardacre, No. 2.	434	1,304	23	870	630	1,311	1,412	Gas, 1,515 feet.
5 Ohio.	R. Hardacre, No. 4.	435	1,305	5	983	517	1,422	1,540	10
6 Ohio.	R. Hardacre, No. 3.	432	1,417	20	1,025	475	1,627	1,640	Gas, 1,456 feet.
7 Ohio.	R. Hardacre, No. 6.	432	1,503	32	1,008	432	1,627	1,640	Gas, 1,275 feet.
8 Ohio.	R. Hardacre, No. 5.	434	1,305	4	873	627	1,615	1,630	107
9 Ohio.	I. B. Smith, No. 4.	433	1,607	10	1,196	305	1,627	1,640	100 Gas, 1,500 feet.
10 Ohio.	I. B. Smith, No. 5.	432	1,615	13	1,183	317	1,615	1,630	80 Gas, 1,580 feet.
11 Ohio.	Ridgely, No. 3.	432	1,604	8	1,200	300	1,634	1,643	180
12 Ohio.	Ridgely, No. 4.	432	1,368	36	1,177	535	1,637	1,650	85
13 Morrison.	McNeece, No. 2.	435	1,362	18	929	571	1,365	1,392	20
14 Faden.	McNeece, No. 1.	434	1,265	12	963	537	1,353	1,407	Now the Morrison Oil Co.
15 Morrison.	McNeece, No. 3.	435	1,352	24	920	580	1,353	1,407	20
1 Ohio.	A. Westall, No. 6.	434	1,321	13	986	514	1,640	1,654	140
2 Ohio.	A. Westall, No. 8.	445	1,475	6	975	525	1,640	1,654	Gas, 1,512 feet.
3 Ohio.	A. Westall, No. 11.	460	1,409	9	1,081	404	1,640	1,654	Gas, 1,520 feet.
4 Ohio.	Clint Thorn, No. 4.	454	1,541	1,207	282	536	1,640	1,654	24 Gas, 1,564 feet.
5 Snowden Bros.	Piper, No. 12.	433	1,370	12	956	545	1,640	1,654	Gas, 1,530 feet.
6 Snowden Bros.	Piper, No. 7.	434	1,502	18	1,068	432	1,640	1,654	35
			1,505	30	900	440	1,640	1,654	Show
			950	65	500	1,000	1,640	1,654	Gas, 1,523 feet.
			1,364	13	914	586	1,364	1,397	No record.
			960	95	436	1,064	1,364	1,397	
			1,330	15	876	624	1,330	1,402	
			1,375	23	921	579	1,375	1,402	
			930	132	447	1,033	1,375	1,402	
			1,168	60	723	788	1,375	1,402	
			1,315	30	832	618	1,375	1,402	
			1,364	16	901	549	1,375	1,402	
			1,498	29	1,053	447	1,375	1,402	
			1,523	8	1,080	410	1,375	1,402	

12— E

N. W.

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
12— N. W.	7	Ohio.....	G. Gray No. 1 (acct. 4).....	437 {	"Gas".....	1,325	10	888	612	1,855	Gas	Drilling
	8	Ohio.....	G. Gray (acct. 4), No. 2....	436 {	Tracey.....	1,572	12	1,135	365			
	9	Ohio.....	G. Gray (acct. 1), No. 1....	447 {	Kirkwood.....	1,441	13	994	506			
	1	Paden.....	C. Thorn, No. 1.....	459 {	McClosky.....	1,607	14	1,160	340	1,613	30	Gas, 1,607 feet.
	2	Morrison.....	C. Thorn, No. 5.....	469 {	do.....	1,627		1,168	332			Now Morrison Oil Co.
S. W.	3	Ohio.....	C. Thorn, No. 2.....	457 {	"Gas".....	1,335	10	878	622			No record
	4	Ohio.....	C. Thorn, No. 3.....	442 {	Kirkwood.....	1,385	40	928	572	1,425	125	
	5	Ohio.....	C. Thorn, No. 1.....	449 {	do.....	1,361	38	919	581	1,390	100	
	6	Ohio.....	Westall, No. 4.....	460 {	"Gas".....	1,360	35	911	589			
	7	Ohio.....	Westall, No. 10.....	464 {	Kirkwood.....	1,409	16	960	540	1,430	130	
	8	Ohio.....	Westall, No. 7.....	450 {	McClosky.....	1,613	37	1,153	347	1,659	35	
	9	Ohio.....	Westall, No. 5.....	463 {	Bridgeport.....	1,000	85	536	964			Gas, 1,580 to 1,600 feet
	10	Ohio.....	Westall, No. 3.....	447 {	Tracey.....	1,574	96	1,110	390	1,661		
	11	Ohio.....	Westall, No. 1.....	439 {	Kirkwood.....	1,465	10	1,015	485			
	12	Ohio.....	Klinger, No. 3.....	435 {	McClosky.....	1,638	12	1,188	312	1,638	50	
	13	Ohio.....	Klinger, No. 6.....	436 {	"Gas".....	1,352	20	889	611	1,352	75	Gas, 1,432 feet
	14	Ohio.....	Pepple, No. 1.....	437 {	Kirkwood.....	1,432	10	969	531	1,475		
	15	Ohio.....	Pepple, No. 2.....	433 {	"Gas".....	1,372	5	925	575			
	16	Ohio.....	Pepple, No. 6.....	435 {	Kirkwood.....	1,416	20	969	531			
					do.....	1,440	7	1,001	499			
					do.....	1,412	11	977	523			
					do.....	1,395	17	959	541			
					Kirkwood-1.....	1,409	7	972	528	1,420	70	
					Kirkwood-2.....	1,462	18	1,025	475			
					McClosky.....	1,616		1,179	321	1,620	Dry	Salt water, 1,616 feet
					Kirkwood.....	1,420	12	987	513		60	
					Kirkwood-1.....	1,405	15	970	530		40	Gas, 1,405 feet
					Kirkwood-2.....	1,496	20	1,001	430			Salt water, 1,470 feet
					Tracey.....	1,568	7	1,133	307	1,664	40	

S. E.	1	Ohio	A. R. Applegate, Tr. No. 1.	436	Buchanan	1, 202	112	766	734	1, 525	Gas	Gas, 1,521 feet.
	2	Ohio	A. R. Applegate, Tr. No. 13	436	Tracey	1, 510	15	1, 074	426	1, 401	125	Gas, 1,375 feet.
	3	Morrison	C. Thorn, No. 3.	437	"Kirkwood"	1, 375	20	939	561	1, 380	120	
	4	Morrison	C. Thorn, No. 2.	442	"Gas"	1, 309	11	872	628	1, 400	100	
	5	Morrison	C. Thorn, No. 4.	448	"Gas"	1, 299	9	857	643	1, 402	80	
	6	Ohio	A. R. Applegate, Tr. No. 15	437	Kirkwood	1, 385	11	943	557	1, 402	135	
	7	Ohio	A. R. Applegate, Tr. No. 12	436	"Gas"	1, 312	10	964	636	1, 408	110	
	8	Ohio	A. R. Applegate, Tr. No. 14	438	Stray	1, 355	13	907	593	1, 408	200	
	9	Ohio	A. R. Applegate, Tr. No. 1.	436	Kirkwood	1, 395	62	947	553	1, 408	Gas	Gas, 1,509 feet.
	10	Ohio	A. R. Applegate, No. 9.	436	"Gas"	1, 283	58	846	654	1, 372	30	
	11	Ohio	A. R. Applegate, No. 5.	436	do	1, 297	20	861	639	1, 375	45	
	12	Ohio	A. R. Applegate, No. 8.	435	Kirkwood	1, 355	60	919	581	1, 379	100	
N. E.	1	Ohio	A. R. Applegate, Tr. No. 10	435	"Gas"	1, 250	16	824	676	1, 375	Gas	Gas, 1,509 feet.
	2	Ohio	A. R. Applegate, Tr. No. 6.	435	Tracey	1, 509	42	1, 073	427	1, 630	30	
	3	Ohio	A. R. Applegate, No. 3.	433	McClosky	1, 583	8	1, 147	353	1, 583	240	
	4	Ohio	A. R. Applegate, No. 4.	436	"Gas"	1, 288	21	904	596	1, 363	15	
	5	Ohio	A. R. Applegate, Tr. No. 19	433	Kirkwood	1, 340	3	855	645	1, 375	Gas	Gas, 1,502 feet.
	6	Ohio	A. R. Applegate, Tr. No. 18	428	"Gas"	1, 290	17	920	580	1, 375	Drilling	
	7	Ohio	A. R. Applegate, Tr. No. 17	433	Kirkwood	1, 355	75	1, 080	420	1, 615	Gas, 1,515 feet.	
	8	Ohio	A. R. Applegate, Tr. No. 16	435	Tracey	1, 515	8	1, 180	320	1, 695	165	
	9	Ohio	A. R. Applegate, Tr. No. 15	436	McClosky	1, 615	75	1, 895	605	1, 670	Gas, 1,502 feet.	
	10	Ohio	A. R. Applegate, Tr. No. 14	435	Kirkwood	1, 330	13	869	631	1, 303	20	
	11	Ohio	A. R. Applegate, Tr. No. 13	433	Tracey	1, 502	20	934	566	1, 315	Gas	
	12	Ohio	A. R. Applegate, Tr. No. 12	436	McClosky	1, 595	13	889	551	1, 387	Drilling	
N. W.	1	Ohio	A. R. Applegate, Tr. No. 11	433	"Gas"	1, 302	90	492	1, 008	1, 541	Gas, 1,662 feet.	
	2	Ohio	A. R. Applegate, Tr. No. 10	428	Kirkwood	1, 367	20	949	551	1, 541	Gas, 1,371 feet.	Well
	3	Ohio	A. R. Applegate, Tr. No. 9	436	do	1, 385	4	894	606	1, 654	abandoned.	
	4	Ohio	A. R. Applegate, Tr. No. 8	436	Bridgeport	920	20	922	578	1, 662	65	
	5	Ohio	A. R. Applegate, Tr. No. 7	435	Kirkwood	1, 350	8	1, 234	266	1, 662	Gas, 1,371 feet.	
	6	Ohio	A. R. Applegate, Tr. No. 6	436	McClosky	1, 662	4	894	606	1, 654	abandoned.	
	7	Ohio	A. R. Applegate, Tr. No. 5	435	"Gas"	1, 230	20	918	582	1, 617	60	
	8	Ohio	A. R. Applegate, Tr. No. 4	435	do	1, 353	15	1, 145	355	1, 617	35	
	9	Ohio	A. R. Applegate, Tr. No. 3	435	McClosky	1, 580	18	940	560	1, 400	20	
	10	Ohio	A. R. Applegate, Tr. No. 2	435	Kirkwood	1, 375	28	973	537	1, 398	35	
	11	Ohio	A. R. Applegate, Tr. No. 1	433	Kirkwood-1	1, 398	12	1, 166	334	1, 408	75	
	12	Ohio	A. R. Applegate, Tr. No. 1	433	Kirkwood-2	1, 408	6	1, 196	304	1, 439	Black oil.	

## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
13— N. W.	10	Craig & Lowrie	Gray, No. 2	434	Kirkwood-1	1,416	15	982	518	1,416		Broken sand, 1,447 to 1,453 feet.
					Kirkwood-2	1,447	35	1,013	487	1,447		
		Craig & Lowrie	Gray, No. 4	434	McClosky-1	1,605	10	1,171	329	1,605		
					McClosky-2	1,632	8	1,198	302	1,642		
	12	Ohio	Gray, No. 1	434	McClosky	1,654	16	1,220	280	1,654		Gas, 1,654 feet.
	13				Kirkwood	1,390	22	956	544	1,408	50	
	14	Ohio	Gray, No. 2	434	do	1,392	39	958	542	1,397	40	
					Bridgeport	900	85	466	1,034	1,462		
					Kirkwood	1,358	22	924	576	1,358	75	
	1	McAuliff	A. Martin, No. 2	432								No record.
	2											do.
	3	Haney & Milligan	A. Martin, No. 1	427	Kirkwood	1,430	8	1,003	497	1,432		
					Tracey	1,543	12	1,116	384			
S. W.	4	Ohio	A. R. Applegate, Tr. No. 16	434	McClosky-1	1,620	6	1,193	307			Salt water.
					McClosky-2	1,655	3	1,228	272	1,705		
	5	Ohio	A. R. Applegate, Tr. No. 11	427	Kirkwood	1,410	25	976	524			
					McClosky	1,620	16	1,186	314	1,620	110	
	6	Ohio	L. Green, No. 1	430	"Gas"	1,380	10	953	547	1,380		
					McClosky	1,602	20	1,175	325	1,605	30	
	7	Ohio	Douglas, No. 1	435	Kirkwood	1,463	5	1,033	467			
					Stray	1,505	7	1,075	425			
	8	Ohio	Douglas, No. 2	430	McClosky	1,663	15	1,233	267	1,663	40	
					Kirkwood	1,520	15	1,085	415	1,520	15	
	9	Ohio	B. H. Crutchfield, No. 1	426	McClosky	1,710	12	1,275	225	1,734		
					Kirkwood	1,521	24	1,091	409	1,531	12	
10	Ohio		E. K. Crutchfield, No. 1	428	do	1,500	50	1,072	428	1,554		
					McClosky	1,648	12	1,220	280	1,648	60	Gas, 1,650 feet.
					Kirkwood	1,500	38	1,072	428	1,505	30	
11	Ohio		E. K. Crutchfield, No. 2	420	Tracey	1,540	5	1,112	388	1,545		
					"Gas"	1,395	30	996	634	1,395		
					Kirkwood	1,478	24	1,049	451	1,492	45	

S. E.	12	Ohio	E. K. Crutchfield, No. 3	434	"Gas"	1,397	6	963	537	1,485	1,520	30		
	1	Ohio	Perry King, No. 33	434	Kirkwood	1,485	35	1,051	449	1,397				
					"Gas"	1,383	24	949	551	1,427	1,450	65		
					Kirkwood	1,424	26	980	510	1,367				
					Stray	1,367	8	934	566	1,400				
14— N. E.	2	Ohio	J. R. King, No. 1	433	"Gas"	1,393	10	960	540	1,455				
	3	Ohio	E. Applegate, No. 2	433	Kirkwood	1,430	15	987	503					
					"Gas"	1,390	12	957	543					
					Tracey	1,490	28	1,057	443	1,720			50 Gas, 1,517 feet	
					"Gas"	1,278	22	845	655					
N. W.	4	Ohio	E. Applegate, No. 1	433	Kirkwood	1,378		945	555	1,378				
	1	Ohio	J. Klinger, No. 1	449	do	1,431	15	982	518	1,443				
					do	1,452	12	994	506	1,452				
					do	1,453	30	1,011	489	1,455				
					McClosky	1,660	25	1,220	280	1,670				
S. E.	4	Ohio	J. Klinger, No. 7	440	Kirkwood	1,493	11	1,023	477	1,493				
	5	Ohio	J. Klinger, No. 2	470	do	1,498	51	1,028	472	1,545				
	6	Ohio	J. Klinger, No. 4	470	McClosky	1,730	31	1,249	251	1,730				
	7	Ohio	O. H. Smith, No. 1	481	Stray	1,490	5	1,020	480	1,805			Dry	
	1	Haywood	Waggoner, No. 1	470	Kirkwood	1,500	10	1,057	443				Light	
15— N. E.	1	Craig & Lowrie	Martin, No. 2	443	McClosky	1,700	3	1,257	243				Salt water, 1,850 feet	
	2	Craig & Lowrie	Martin, No. 1	441	Kirkwood	1,468	5	1,027	473				Lime, 1,880 to 1,955 feet	
					McClosky	1,672	16	1,231	269					
					Bridgeport	900	45	462	1,038				Salt water, 945 feet	
					Bridgeport and Buchanan	1,000	115	562	938				Hole full of water, 1,115 feet	
N. E.	3	Snowden Bros	Moudy, No. 1	438	Buchanan	1,250	20	812	688				Salt water, 1,270 feet	
	1	Snowden Bros	I. Vanatta, No. 2	475	Stray	1,375	17	937	563					
					"Gas"	1,465	20	1,027	473	1,465				
					Kirkwood	1,500	50	1,062	434				Salt water, 1,515 feet	
					McClosky	1,680	12	1,242	258	1,775			Green oil. Well abandoned	
17— N. E.	1	Cochran	Henry Bolles, No. 1	428	Bridgeport	883	20	408	1,092				Salt water, 1,023 feet	
					do	1,003	20	528	972					
					do	1,095	20	620	890					
					do	1,192	18	717	783					
	N. W.	1	Central Refining Co	Klinger, No. 12	435	Buchanan-1	1,315	55	840	660				Salt water, 1,970, 2,025, 2,110, 2,235 and 2,593 feet
Buchanan-2						1,520	76	1,045	455				Lime, 2,003 to 2,936 feet	
Kirkwood						1,635	13	1,160	340					
Tracey						1,763	99	1,288	212					
17— N. E.		1	Cochran	Henry Bolles, No. 1	428	McClosky	1,937	8	1,462	38	2,936			Dry
	Kirkwood					1,589	22	1,161	337					
	Tracey					1,727	17	1,299	201					
	McClosky					1,793		1,365	135	1,793			Dry	
	N. W.	1	Central Refining Co	Klinger, No. 12	435	Kirkwood-1	1,433	5	998	502				
Kirkwood-2						1,452	32	1,017	483	1,472	1,484			

## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
17— N. W. S. W.	2	Central Refining Co.	Klinger, No. 1.	435	Bridgeport.	872	32	437	1,063	875	919	.....
	1	Ohio.	J. Bolles, No. 1.	436	"Gas".	1,347	68	911	1,589	1,451	1,493	.....
	2	Ohio.	Ridgely, No. 2.	436	Tracey.	1,451	29	1,015	485	1,372	1,423	Gas, 1,451 feet.
	3	Ohio.	J. Bolles, No. 3.	436	Kirkwood.	1,369	24	933	567	1,424	1,571	.....
	4	Ohio.	W. Westall, No. 5.	436	..do.	1,424	20	988	512	1,340	1,447	.....
	5	Ohio.	W. Westall, No. 3.	436	..do.	1,340	25	904	596	1,318	.....	.....
	6	Ohio.	W. Westall, No. 4.	437	"Gas".	1,318	15	882	618	.....	.....	Salt water.
	7	Ohio.	W. Westall, No. 1.	437	Kirkwood-1.	1,356	12	920	580	.....	.....	.....
	8	Ohio.	W. Westall, No. 4.	435	Kirkwood-2.	1,378	12	942	558	1,282	1,305	.....
	9	Ohio.	Skiles, No. 7.	434	"Gas".	1,282	15	845	655	.....	.....	.....
	1	Central Refining Co.	Skiles, No. 4.	436	Kirkwood.	1,384	16	950	550	1,384	1,402	No record.
	2	Central Refining Co.	Skiles, No. 7.	433	Tracey.	1,470	18	1,034	466	1,470	1,491	.....
S. E.	1	Central Refining Co.	M. Wood, No. 1.	433	Kirkwood.	1,413	16	980	520	1,418	1,435	.....
	2	Central Refining Co.	M. Wood, No. 2.	433	Bridgeport.	.....	.....	.....	.....	.....	.....	No record.
	3	Central Refining Co.	M. Wood, No. 3.	433	Bridgeport.	900	10	467	1,033	.....	.....	.....
18— N. E.	1	Shaffer & Smathers.	Wright, No. 1.	436	"Gas".	1,343	15	910	590	.....	1,475	.....
	2	Shaffer & Smathers.	W. Applegate, No. 9.	436	Kirkwood.	1,430	5	994	506	.....	.....	.....
	3	Shaffer & Smathers.	W. Applegate, No. 6.	436	McClosky.	1,596	4	1,160	340	.....	1,706	Dry.
	4	Shaffer & Smathers.	W. Applegate, No. 8.	436	Kirkwood.	1,406	16	970	530	.....	1,422	.....
	5	Shaffer & Smathers.	W. Applegate, No. 5.	436	Bridgeport.	923	19	487	1,013	.....	942	.....
	6	Shaffer & Smathers.	W. Applegate, No. 5.	436	..do.	920	20	484	1,016	.....	.....	.....
	7	Shaffer & Smathers.	W. Applegate, No. 5.	436	McClosky.	1,619	9	1,183	317	.....	1,640	.....
	8	Shaffer & Smathers.	W. Applegate, No. 5.	436	Bridgeport.	903	15	467	1,033	.....	.....	.....
	9	Shaffer & Smathers.	W. Applegate, No. 5.	436	"Gas".	1,282	10	846	654	.....	.....	.....
	10	Shaffer & Smathers.	W. Applegate, No. 5.	436	Stray.	1,450	8	1,014	486	.....	.....	.....

6 Shaffer & Smathers.....	W. Applegate, No. 1.....	436	800	12	451	1,046	1,455	115	.....
7 Shaffer & Smathers.....	W. Applegate, No. 3.....	436	1,433	10	997	1,073	1,455	50	.....
			899	17	464	1,046	910	30	Broken sand.....
			899	32	452	1,046	.....	.....	.....
			1,301	16	985	832	.....	75	.....
8 Shaffer & Smathers.....	W. Applegate, No. 7.....	436	1,430	10	994	506	.....	.....	.....
			1,400	10	1,094	436	.....	.....	.....
			1,445	.....	1,120	371	.....	.....	.....
			1,325	8	1,159	341	.....	.....	.....
			1,801	6	1,185	335	.....	.....	.....
9 Shaffer & Smathers.....	W. Applegate, No. 2.....	436	1,888	32	452	1,046	1,617	1,079	Lime, 1,598 to 1,601 feet.....
			1,595	20	1,150	341	940	50	.....
10 Shaffer & Smathers.....	W. Applegate, No. 4.....	436	1,637	.....	1,201	206	1,586	20	.....
			1,771	.....	1,335	185	.....	.....	Salt water.....
			1,948	45	432	1,046	1,780	.....	do.....
11 Central Refining Co.....	Klinger, No. 5.....	436	1,377	7	871	503	1,314	.....	.....
			1,345	15	907	503	.....	.....	.....
			1,372	42	430	1,046	.....	.....	.....
			1,200	.....	854	645	.....	.....	.....
12 Central Refining Co.....	Klinger, No. 11.....	436	1,340	30	904	593	.....	.....	.....
			1,418	22	982	518	1,430	.....	.....
			1,570	15	1,064	436	.....	.....	Gas, 1,600 feet.....
			1,645	47	1,120	372	1,585	.....	Oil, 1,608 feet.....
13 Central Refining Co.....	Klinger, No. 10.....	436	1,425	25	983	511	1,483	.....	.....
14 Central Refining Co.....	Klinger, No. 8.....	436	1,808	43	432	1,046	870	922	.....
15 Central Refining Co.....	Klinger, No. 9.....	436	800	30	454	1,046	905	936	.....
16 Central Refining Co.....	Klinger, No. 3.....	436	1,336	60	862	538	1,320	1,362	.....
			1,538	41	402	1,046	840	.....	Salt water, 863 feet.....
17 Central Refining Co.....	Klinger, No. 1.....	436	981	159	525	975	.....	.....	Salt water 981 feet.....
			1,245	32	800	601	.....	.....	Gas, 1,247 feet.....
			1,512	45	876	624	1,316	.....	.....
			1,520	20	334	1,116	.....	.....	.....
18 Central Refining Co.....	Klinger, No. 2.....	436	976	.....	530	981	.....	.....	.....
			1,245	.....	820	671	1,270	.....	.....
19 Central Refining Co.....	Klinger, No. 4.....	436	1,118	64	832	618	1,352	.....	.....
20 Central Refining Co.....	Klinger, No. 6.....	436	1,380	16	444	1,046	880	.....	.....
21 Central Refining Co.....	Klinger, No. 13.....	436	1,385	33	940	651	1,390	1,421	No record. Drilling.....
1 Ohio.....	Perry King, No. 39.....	435	1,155	10	924	578	.....	.....	.....
			1,580	15	1,145	355	1,580	60	.....
2 Ohio.....	Perry King, No. 25.....	435	1,570	.....	1,135	385	1,570	.....	Production increased to 200 bbls the 2d day.....
			1,604	14	1,069	331	1,601	1,618	.....
3 Ohio.....	Perry King, No. 40.....	435	1,573	34	1,135	362	1,585	1,607	.....
			1,300	8	864	534	.....	.....	Gas, 1,485 feet.....
4 Ohio.....	Perry King, No. 24.....	434	1,485	.....	1,051	449	1,585	1,604	Production increased to 1,320 bbls. 2d day.....
			1,686	26	1,154	346	.....	.....	.....
5 Ohio.....	Perry King, No. 44.....	434	1,339	11	905	625	.....	.....	.....
			1,572	6	1,158	348	1,608	.....	.....
6 Ohio.....	Perry King, No. 34.....	435	1,595	5	1,100	340	1,618	.....	.....

N. W..



## Lawrence County—Perry Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
1 <sup>st</sup> N. W.	7 Ohio.		Perry King, No. 27.	434	Bridgeport.	898	47	464	1,036	898	90	Well abandoned.
	8 Ohio.		Perry King, No. 31.	434	McClosky-1.	1,565	20	1,131	369	1,592	250	
	9 Ohio.		Perry King, No. 28.	434	McClosky-2.	1,590	22	1,158	344	1,615		
	10 Ohio.		Perry King, No. 29.	434	"Gas".	1,290	11	856	644	1,290		
					Kirkwood.	1,329	17	895	605	1,335	65	
					McClosky.	1,565	47	1,131	369	1,575	2,400	Flowing well. Production 2d day, 2,000 bbls.
	11 Ohio.		Perry King, No. 22.	435	Kirkwood-1.	1,327	5	892	608			
	12 Ohio.		Perry King, No. 18.	436	Kirkwood-2.	1,349	11	914	586	1,349	60	
	13 Ohio.		Perry King, No. 12.	436	Kirkwood.	1,312	37	876	624	1,312	50	
					"Gas".	1,268	20	832	668			
					Kirkwood.	1,342	40	906	594	1,342	25	
					"Gas".	1,275	5	840	660			
	14 Ohio.		A. Applegate, No. 2.	435	Stray.	1,292	18	857	643	1,292		
					Kirkwood.	1,350	30	915	585		60	
	15 Ohio.		A. Applegate, No. 5.	433	Kirkwood-1.	1,360	12	927	573	1,360	10	
	16 Ohio.		A. Applegate, No. 7.	435	Kirkwood-2.	1,400	13	967	533			
					Tracey.	1,485		1,050	450	1,413		Gas, 1,485 feet.
	17 Ohio.		A. Applegate, No. 9.	434	McClosky.	1,600	20	1,185	335	1,600	1,200	
	18 Ohio.		A. Applegate, No. 17.	435	Tracey.	1,515	67	1,081	419	1,620		Gas, 1,515 feet.
	19 Ohio.		A. Applegate, No. 8.	434	McClosky.	1,598	75	1,164	336	1,665	175	
					Bridgeport.	960	15	515	985		35	
					Kirkwood-2.	1,395	10	960	540	1,395		
					Kirkwood.	1,320		886	614	1,591		
					Stray.	1,500		1,066	434			
8. W.	1 Ohio.		Perry King, No. 14.	433	McClosky.	1,597	23	1,163	337	1,597	1,400	
	2 Ohio.		Perry King, No. 11.	434	Kirkwood.	1,355	31	922	578	1,620	30	
	3 Ohio.		Perry King, No. 20.	435	Tracey.	1,513	22	1,079	421	1,568	125	Gas, 1,513 feet.
	4 Ohio.		Perry King, No. 5.	434	Kirkwood.	1,312	46	877	623	1,357	60	
					"Gas".	1,226		792	704			Gas, 1,231 feet.
					Kirkwood.	1,204		864	630			Gas, 1,204 feet.

2 Ohio.....	Skiles, No. 8.....	433	"Gas".....	1,345	18	912	588	1,345	1,428	25	.....
3 Ohio.....	Skiles, No. 3.....	436	Kirkwood.....	1,392	26	956	544	1,392	1,418	45	.....
4 Ohio.....	Skiles, No. 5.....	437	Bridgeport.....	1,922	31	485	1,015	1,922	953	100	.....
5 Ohio.....	Skiles, No. 1.....	442	Kirkwood-1.....	1,294	4	852	648	.....	.....	.....	.....
6 Ohio.....	Skiles, No. 6.....	427	Kirkwood-2.....	1,313	41	871	629	1,313	.....	30	.....
			Kirkwood-1.....	1,350	12	923	577	.....	.....	.....	.....
			Kirkwood-2.....	1,431	15	1,004	496	1,431	1,453	100	.....
			Bridgeport.....	1,826	40	399	1,101	.....	.....	.....	.....
			do.....	871	59	444	1,056	.....	.....	.....	.....
			do.....	955	105	528	972	.....	.....	.....	Salt water, 998 feet.....
			do.....	1,080	5	653	847	.....	.....	.....	.....
			Buchanan.....	1,130	68	703	797	.....	.....	.....	Salt water.....
7 Bridgeport.....	M. Wood, No. 11.....	427	Stray.....	1,232	9	805	695	.....	.....	.....	.....
			"Gas".....	1,335	13	908	592	.....	.....	.....	.....
			Kirkwood-1.....	1,397	10	970	530	1,406	.....	.....	.....
			Kirkwood-2.....	1,433	17	1,006	494	1,445	.....	.....	.....
			Tracey.....	1,470	25	1,043	457	1,475	1,505	.....	.....
			Bridgeport.....	1,785	15	357	1,143	.....	.....	.....	.....
			do.....	840	10	412	1,088	.....	.....	.....	.....
			do.....	870	27	442	1,058	.....	.....	.....	.....
			do.....	930	113	502	998	.....	.....	.....	Salt water, 980 feet.....
			Buchanan.....	1,105	82	677	823	.....	.....	.....	Salt water, 1,148 feet.....
8 Bridgeport.....	M. Wood, No. 12.....	428	Stray.....	1,211	13	783	717	.....	.....	.....	.....
			Kirkwood-1.....	1,368	3	960	540	.....	.....	.....	.....
			Kirkwood-2.....	1,394	26	966	534	1,394	.....	Show	.....
			Stray.....	1,435	8	1,007	493	1,437	.....	.....	.....
			Tracey.....	1,462	28	1,034	466	1,462	1,498	.....	.....
9 Bridgeport.....	M. Wood, No. 7.....	430	Bridgeport.....	825	.....	390	1,110	.....	.....	Dry	No record.....
			do.....	915	110	480	1,020	930	.....	.....	.....
			Buchanan.....	1,110	40	675	825	.....	.....	.....	Salt water, 985 feet.....
10 Bridgeport.....	M. Wood, No. 10.....	435	"Gas".....	1,285	18	850	650	.....	.....	.....	.....
			Kirkwood.....	1,333	72	898	602	{ 1,340 } 1,408	.....	.....	.....
			Kirkwood-1.....	1,312	15	872	628	.....	.....	.....	Slate, 1,327 to 1,329 feet.....
			Kirkwood-2.....	1,329	13	889	611	.....	.....	.....	.....
11 Bridgeport.....	M. Wood, No. 4.....	440	Kirkwood.....	1,296	51	857	643	.....	1,347	.....	.....
12 Bridgeport.....	M. Wood, No. 5.....	439	.....	.....	.....	.....	.....	.....	.....	No record.....	.....
13 Bridgeport.....	M. Wood, No. 2.....	430	Kirkwood.....	1,279	54	849	651	1,382	1,341	.....	No record.....
14 Bridgeport.....	M. Wood, No. 9.....	430	.....	.....	.....	.....	.....	.....	.....	.....	.....
15 Bridgeport.....	M. Wood, No. 1.....	428	.....	.....	.....	.....	.....	.....	.....	.....	No record.....
16 Bridgeport.....	M. Wood, No. 3.....	422	.....	.....	.....	.....	.....	.....	.....	.....	do.....
17 Bridgeport.....	M. Wood, No. 8.....	431	Stray.....	1,433	20	1,002	498	.....	1,459	.....	Red rock, 1,300, 1,360 and 1,423 feet.....
18 Bridgeport.....	M. Wood, No. 6.....	435	Bridgeport.....	910	.....	475	1,025	.....	940	.....	.....
			do.....	875	30	445	1,055	.....	.....	.....	.....
			do.....	1,000	75	570	930	.....	.....	.....	.....
			Buchanan.....	1,130	100	700	800	.....	.....	.....	.....
			"Gas".....	1,275	19	845	655	.....	.....	.....	.....
			Kirkwood.....	1,390	10	950	550	.....	.....	.....	.....
			Tracey.....	1,590	15	1,160	340	.....	.....	.....	.....
			McClusky-1.....	1,670	12	1,240	260	.....	.....	.....	.....
19 Bridgeport.....	M. Wood, No. 13.....	430	McClusky-2.....	1,698	7	1,268	232	.....	1,705	.....	Salt water.....

## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
19— N. W..	2	Bridgeport.....	Cooper, No. 9.....	433	Kirkwood-1.....	1,298	13	965	635	1,298	.....	.....
					Kirkwood-2.....	1,320	12	887	613	1,322	.....	.....
					Kirkwood-3.....	1,355	30	922	578	1,355	.....	Gas 3,000,000 cu. ft. gas daily from 1,510 to 1,560 feet..
					Tracey.....	1,485	75	1,052	448	.....	1,560	15
	3	Bridgeport.....	Cooper, No. 6.....	433	Kirkwood-1.....	1,319	34	886	614	1,320	.....	.....
					Kirkwood-2.....	1,375	10	942	558	.....	1,421	.....
					Tracey.....	1,515	81	1,062	418	1,571	.....	3,000,000 cu. ft. gas daily from 1,515 to 1,555 feet..
					Stray.....	1,596	9	1,163	337	1,606	.....	.....
	4	Bridgeport.....	Cooper, No. 11.....	433	McClosky.....	1,612	29	1,179	321	1,612	1,641	80
					Kirkwood.....	1,298	102	861	639	1,315	1,400	17
					do.....	1,314	.....	878	622	1,338	.....	Quit in sand.....
					Tracey.....	1,475	.....	1,039	461	1,320	1,525	Gas 7,500,000 cu. ft. gas daily from 1,515 feet, 650 pounds rock pressure..
	7	Bridgeport.....	Cooper, No. 2.....	437	Kirkwood.....	1,310	58	873	627	1,335	1,444	25
					"Gas".....	1,280	14	854	646	1,358	.....	.....
					Kirkwood-1.....	1,326	30	900	600	.....	.....	Show
					Kirkwood-2.....	1,370	15	944	556	1,375	.....	.....
	8	Bridgeport.....	Cooper, No. 8.....	426	Tracey-1.....	1,475	35	1,049	451	.....	.....	1,000,000 cubic feet gas daily from 1,475 to 1,510 feet.....
					Tracey-2.....	1,565	10	1,129	361	1,570	.....	.....
					McClosky.....	1,581	38	1,145	345	1,602	1,619	70
					Kirkwood-1.....	1,360	42	924	576	1,615	.....	Sand broken, 1,371 to 1,393 feet.....
	9	Bridgeport.....	Cooper, No. 5.....	436	Kirkwood-2.....	1,406	10	960	631	1,371	.....	Well abandoned.....
					Kirkwood-3.....	1,414	4	942	614	1,405	1,422	.....

[illegible]

## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
19— S. W.	19	Ohio.....	Berkshire, No. 2.....	422 {	"Gas".....	1,262	.....	840	660	.....	.....	Gas, 1,265 feet
	20	Ohio.....	Willey, No. 8.....	435	Stray.....	1,400	.....	978	522	.....	Dry	Salt water.
	21	Ohio.....	Willey, No. 2.....	434	Kirkwood.....	1,324	10	889	611	1,324	135	Well abandoned.
	22	Ohio.....	Willey, No. 6.....	427	Bridgeport.....	955	22	521	979	960	70	.....
	23	Ohio.....	Willey, No. 4.....	436	Kirkwood.....	1,313	20	866	714	1,313	50	.....
	24	Ohio.....	Willey, No. 3.....	435	do.....	1,302	31	866	634	1,302	130	.....
	25	Ohio.....	Willey, No. 7.....	441	Bridgeport.....	902	22	467	1,033	1,307	60	.....
	26	Ohio.....	Willey, No. 1.....	440 {	Kirkwood.....	1,307	36	866	1,033	1,353	50	.....
	27	Ohio.....	Willey, No. 5.....	442 {	Bridgeport.....	860	30	420	1,080	.....	200	.....
	1	Silurian.....	Crump (40), No. 1.....	444 {	do.....	923	28	483	1,017	933	.....	.....
S. E.	2	Silurian.....	Crump (40), No. 11.....	444 {	do.....	825	13	383	1,117	.....	75	.....
	3	Silurian.....	Crump (40), No. 13.....	445	Kirkwood.....	1,325	30	883	617	1,331	.....	Quit in sand.
	4	Silurian.....	Crump (40), No. 9.....	436	Bridgeport.....	831	104	387	1,113	835	.....	Salt water, 936 feet.
	5	Silurian.....	Crump (40), No. 17.....	440 {	do.....	815	191	371	1,129	.....	.....	Gas, 1,230 feet.
	6	Silurian.....	Crump (40), No. 16.....	440 {	"Gas".....	1,230	4	786	714	.....	.....	.....
	7	Silurian.....	Crump (40), No. 6.....	432	Stray.....	1,250	.....	806	694	.....	150	.....
	8	Silurian.....	Crump (40), No. 15.....	426	Kirkwood.....	1,301	44	857	643	1,313	150	.....
					Bridgeport.....	917	20	472	1,028	1,347	.....	.....
					do.....	904	34	468	1,032	.....	.....	.....
					do.....	860	290	420	1,080	.....	.....	Salt water, 972 to 1,140 feet
					Kirkwood.....	1,252	33	842	658	1,318	125	Red rock, 1,280 to 1,272 feet.
					Bridgeport.....	865	30	425	1,075	.....	.....	.....
					do.....	980	120	540	960	.....	.....	Salt water.
					Kirkwood.....	1,281	31	841	659	.....	.....	.....
					Tracey.....	1,420	10	960	520	.....	Gas	Gas, 400 pounds rock pre+ sure
					Bridgeport.....	907	13	475	1,025	907	920	.....
					do.....	877	19	451	1,049	807	100	.....

9	Silurian.....	Crump (40), No. 12.....	430	do.....	885	82	455	1, 045	.....	.....	.....	Salt water.....
				Buchanan.....	1, 005	85	575	1, 925	.....	.....	.....	
				"Gas".....	1, 229	3	799	701	.....	.....	.....	
				Kirkwood-1.....	1, 266	12	836	664	.....	.....	.....	
				Kirkwood-2.....	1, 283	22	852	648	1, 305	.....	150	
				Bridgeport.....	1, 900	30	370	1, 130	800	.....	Show	
				do.....	885	82	455	1, 045	.....	.....	.....	
10	Silurian.....	Crump (40), No. 8.....	430	Buchanan.....	1, 005	85	575	701	.....	.....	.....	Salt water.....
				"Gas".....	1, 229	3	799	701	.....	.....	.....	
				Kirkwood.....	1, 266	39	836	664	1, 294	.....	.....	Slate, 1,287 to 1,294 feet.....
				Bridgeport.....	1, 850	10	420	1, 080	.....	.....	Show	
				do.....	885	75	465	1, 035	947	.....	.....	
				do.....	895	32	379	1, 121	.....	.....	.....	
				do.....	760	32	334	1, 166	780	.....	.....	
				do.....	895	.....	469	1, 031	905	.....	20	
				do.....	758	10	326	1, 174	.....	.....	.....	
				do.....	802	22	370	1, 130	.....	.....	.....	
				do.....	882	10	450	1, 050	.....	.....	100	
14	Silurian.....	Crump (40), No. 14.....	432	.....	.....	.....	.....	.....	.....	.....	.....	No record.....
15	Silurian.....	Crump (40), No. 18.....	435	Bridgeport.....	917	94	482	1, 018	.....	.....	.....	
				"Gas".....	1, 237	13	802	698	.....	.....	.....	
16	Silurian.....	Crump (40), No. 10.....	435	Kirkwood.....	1, 301	38	866	634	.....	.....	.....	
				Bridgeport.....	760	30	325	1, 175	790	.....	5	
				do.....	918	.....	483	1, 017	.....	.....	.....	
				do.....	890	.....	455	1, 045	900	.....	.....	
				"Gas".....	1, 223	10	809	691	.....	.....	.....	
				Kirkwood.....	1, 280	35	856	644	1, 287	.....	90	
				Bridgeport.....	910	27	485	1, 015	913	.....	90	
				do.....	870	64	435	1, 065	.....	.....	.....	
				Kirkwood.....	1, 271	39	836	664	1, 271	1, 324	.....	100
				Bridgeport.....	795	10	380	1, 140	.....	.....	.....	
				do.....	901	30	466	1, 034	901	.....	250	
				do.....	912	30	477	1, 023	925	.....	80	
				Kirkwood-1.....	1, 295	15	860	640	.....	.....	.....	
				Kirkwood-2.....	1, 315	20	880	620	1, 315	1, 354	.....	135
				Bridgeport.....	867	36	441	1, 059	887	.....	.....	
				do.....	909	18	483	1, 017	912	.....	100	
				Kirkwood.....	1, 265	57	839	661	1, 270	1, 317	.....	200
				Bridgeport.....	813	25	380	1, 120	.....	.....	.....	Gas, 1,265 feet.....
				do.....	870	25	437	1, 063	.....	.....	.....	
				do.....	916	12	483	1, 017	916	.....	210	
				do.....	894	26	455	1, 045	887	.....	10	
				"Gas".....	1, 222	.....	798	702	.....	.....	Gas	
				Kirkwood.....	1, 272	30	848	652	1, 272	1, 302	.....	75
				Bridgeport.....	800	.....	367	1, 133	925	.....	200	
				Kirkwood.....	1, 268	24	834	666	1, 269	1, 292	.....	90
				Bridgeport.....	812	5	378	1, 122	.....	.....	.....	
				do.....	870	80	436	1, 064	.....	.....	.....	
				Buchanan.....	990	135	556	1, 944	.....	.....	.....	Salt water, 980 feet.....
				Kirkwood.....	1, 264	42	830	670	1, 274	1, 306	.....	Gas, 1,278 feet.....
				Bridgeport.....	812	30	365	1, 135	.....	.....	.....	
33	Ohio.....	Lathrop, No. 2.....	447	do.....	879	30	432	1, 068	900	.....	.....	

## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
22—	S. E...	10 Ohio.....	Dickerson, No. 1.....	473 {	Kirkwood.....	1,506	14	1,033	467	1,700	1,743	25	.....
		11 Ohio.....	Dickerson, No. 2.....	471 {	McClosky.....	1,695	23	1,222	278	.....	.....	.....	Drilling.....
23—					Bridgeport.....	800	50	370	1,120	.....	.....	.....	Salt water, 850 feet.....
					do.....	1,010	100	590	920	.....	.....	.....	Salt water, 1,010 feet.....
					Buchanan.....	1,165	225	735	765	.....	.....	.....	Salt water, 1,375 feet.....
					Kirkwood-1.....	1,530	35	1,100	400	.....	.....	.....	.....
					Kirkwood-2.....	1,600	18	1,170	330	.....	.....	.....	Salt water and show of oil, 1,618 feet.....
N E...		1 Snowden Bros.....	Vanatta, No. 2.....	430 {	Tracey.....	1,740	25	1,310	190	1,945	2,590	Dry	Light show of oil, 1,945 feet.....
					McClosky.....	1,945	.....	1,515	-15	.....	.....	.....	.....
24—					"Gas".....	1,307	28	873	627	1,307	.....	.....	.....
	N E...	1 Ohio.....	Perry King, No. 42.....	434 {	Stray.....	1,342	8	908	592	.....	.....	.....	.....
					Kirkwood.....	1,365	37	931	599	1,385	1,402	142	.....
		2 Ohio.....	Perry King, No. 17.....	436 {	"Gas".....	1,319	99	883	617	1,362	1,418	40	.....
		3 Ohio.....	Perry King, No. 9.....	451 {	do.....	1,335	6	884	616	.....	.....	.....	.....
					Kirkwood.....	1,415	24	904	536	1,415	.....	.....	.....
		4 Ohio.....	Perry King, No. 8.....	452 {	Kirkwood-1.....	1,375	20	923	577	1,376	.....	.....	.....
					Kirkwood-2.....	1,435	15	983	517	1,440	.....	.....	.....
		1 Ohio.....	Perry King, No. 32.....	433 {	Kirkwood.....	1,497	20	1,064	436	1,497	1,549	75	.....
					Kirkwood-1.....	1,502	20	1,099	431	1,503	.....	.....	.....
		2 Ohio.....	Douglas, No. 2.....	433 {	Kirkwood-2.....	1,530	22	1,097	403	1,535	1,552	100	Gas well. No gas data.....
					Kirkwood-1.....	1,496	8	1,057	443	.....	.....	.....	.....
		3 Ohio.....	Douglas, No. 3.....	438 {	Kirkwood-2.....	1,528	12	1,090	410	.....	.....	Gas	.....
					Tracey.....	1,665	14	1,227	273	1,665	1,679	30	.....
		4 Ohio.....	Douglas, No. 1.....	435 {	Kirkwood.....	1,515	17	1,080	420	1,521	1,532	180	Gas, 1,515 feet.....
					"Gas".....	1,449	5	1,014	486	1,449	.....	.....	.....
		5 Ohio.....	Perry King, No. 10.....	435 {	Kirkwood.....	1,500	17	1,065	435	1,500	.....	.....	.....
					do.....	1,513	22	1,084	416	1,513	1,550	150	.....
		6 Ohio.....	Perry King, No. 13.....	429 {	Kirkwood.....	1,513	22	1,084	416	1,513	1,550	125	Gas, 1,513 feet.....
		7 Ohio.....	Perry King, No. 45.....	442 {	do.....	1,516	23	1,074	426	1,516	1,569	120	.....





Lawrence County—Pctty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
25— N. E..		7 Snowden Bros.....	Pepple, No. 8.....	477	Bridgeport.....	800	20	323	1,177	.....	.....	.....	.....
					do.....	975	25	498	1,002	.....	.....	.....	.....
					do.....	1,025	5	548	952	.....	.....	.....	.....
					do.....	1,065	10	588	912	.....	.....	.....	.....
					do.....	1,090	20	613	887	.....	.....	.....	Salt water, 1,100 feet.....
					do.....	1,170	15	693	807	.....	.....	.....	Hole full of water, 1,175 feet.....
N. W..		1 Ohio.....	T. F. Pepple, No. 1.....	477	Buchanan-1.....	1,265	35	788	712	.....	.....	.....	.....
					Buchanan-2.....	1,320	10	843	657	.....	.....	.....	.....
					Kirkwood-1.....	1,480	15	1,003	497	.....	.....	Show	.....
					Kirkwood-2.....	1,500	10	1,023	477	.....	.....	.....	.....
					Kirkwood-3.....	1,520	22	1,043	457	.....	.....	.....	.....
					Stray.....	1,605	9	1,128	372	.....	.....	.....	.....
S. E..		2 Unknown.....	T. F. Pepple, (20 acres) No.1	471	Tracey.....	1,647	15	1,170	330	.....	.....	Show	.....
					McClosky.....	1,727	9	1,250	250	.....	1,922	.....	.....
					do.....	1,907	19	1,430	70	.....	1,926	60	Gas, 1,907 feet. Salt water, 1,926 feet.....
					Kirkwood-1.....	1,615	21	1,107	393	.....	.....	.....	No record.....
					Kirkwood-2.....	1,646	10	1,138	362	.....	.....	.....	Salt water, 1,636 feet.....
					Bridgeport.....	700	.....	203	1,297	.....	1,914	.....	.....
N. E..		2 Snowden Bros.....	J. Adams, No. 1.....	497	Kirkwood.....	1,528	38	1,037	463	.....	1,818	30	Record incomplete.....
					do.....	1,532	30	1,047	463	.....	1,569	105	.....
					do.....	1,539	.....	1,054	446	.....	.....	60	Well abandoned.....
					"Gas".....	1,435	9	957	543	.....	1,610	Dry	.....
					Kirkwood.....	1,494	50	1,016	484	.....	1,571	110	.....
					do.....	1,523	22	1,055	445	.....	1,523	42	.....
N. E..		1 Craig & Lowrie.....	Goff, No. 2.....	429	McClosky.....	1,640	7	1,211	289	.....	1,692	Light	T. 5 N., R. 13 W.....
					Tracey.....	1,500	15	1,071	429	.....	.....	.....	Gas, 1,500 feet.....
					McClosky.....	1,639	29	1,210	290	.....	1,690	.....	.....
					Tracey.....	1,520	15	1,091	409	.....	1,693	20	.....
					do.....	1,643	21	1,214	286	.....	1,672	25	.....
					McClosky.....	1,643	21	1,214	286	.....	1,672	25	.....

2 Ohio.....	Skiles, No. 8.....	433	"Gas".....	1,345	18	912	588	1,345	1,428	25	.....
3 Ohio.....	Skiles, No. 3.....	436	Kirkwood.....	1,392	26	956	544	1,392	1,418	45	.....
4 Ohio.....	Skiles, No. 5.....	437	Bridgeport.....	1,922	31	485	1,015	922	953	100	.....
5 Ohio.....	Skiles, No. 1.....	442	Kirkwood-1.....	1,294	4	852	648	.....	.....	30	.....
6 Ohio.....	Skiles, No. 6.....	427	Kirkwood-2.....	1,313	41	871	629	1,313	.....	.....	.....
			Kirkwood-1.....	1,350	12	923	577	.....	.....	.....	.....
			Kirkwood-2.....	1,431	15	1,004	496	1,431	1,453	100	.....
			Bridgeport.....	1,826	40	399	1,101	.....	.....	.....	.....
			do.....	871	59	444	1,056	.....	.....	.....	.....
			do.....	955	105	528	972	.....	.....	.....	Salt water, 998 feet.....
			do.....	1,060	5	653	847	.....	.....	.....	.....
			Buchanan.....	1,130	68	703	797	.....	.....	.....	Salt water.....
7 Bridgeport.....	M. Wood, No. 11.....	427	Stray.....	1,232	9	805	695	.....	.....	.....	.....
			"Gas".....	1,335	13	908	592	.....	.....	.....	.....
			Kirkwood-1.....	1,397	10	970	530	1,406	.....	.....	.....
			Kirkwood-2.....	1,433	17	1,006	494	1,445	.....	.....	.....
			Tracey.....	1,470	25	1,043	457	1,475	1,505	.....	.....
			Bridgeport.....	1,785	15	357	1,143	.....	.....	.....	.....
			do.....	840	10	412	1,088	.....	.....	.....	.....
			do.....	870	27	442	1,058	.....	.....	.....	Salt water, 980 feet.....
			do.....	930	113	502	998	.....	.....	.....	Salt water, 1,148 feet.....
			Buchanan.....	1,105	82	677	823	.....	.....	.....	.....
8 Bridgeport.....	M. Wood, No. 12.....	428	Stray.....	1,211	13	783	717	.....	.....	.....	.....
			Kirkwood-1.....	1,388	3	960	540	.....	.....	.....	.....
			Kirkwood-2.....	1,394	26	966	534	1,394	.....	Show	.....
			Stray.....	1,435	8	1,007	493	1,437	.....	.....	.....
			Tracey.....	1,462	28	1,034	466	1,462	1,498	.....	.....
9 Bridgeport.....	M. Wood, No. 7.....	430	Bridgeport.....	825	.....	390	1,110	.....	.....	Dry	No record.....
			do.....	915	110	480	1,020	930	.....	.....	.....
			Buchanan.....	1,110	40	675	825	.....	.....	.....	Salt water, 985 feet.....
10 Bridgeport.....	M. Wood, No. 10.....	435	"Gas".....	1,285	18	850	650	.....	.....	.....	.....
			Kirkwood.....	1,333	72	898	602	{ 1,340 } 1,370	1,408	.....	.....
11 Bridgeport.....	M. Wood, No. 4.....	440	Kirkwood-1.....	1,312	15	872	628	.....	.....	.....	Slate, 1,327 to 1,329 feet.....
12 Bridgeport.....	M. Wood, No. 5.....	439	Kirkwood-2.....	1,329	13	889	611	.....	.....	.....	.....
13 Bridgeport.....	M. Wood, No. 2.....	430	Kirkwood.....	1,298	51	857	643	.....	1,347	.....	.....
14 Bridgeport.....	M. Wood, No. 9.....	430	.....	.....	.....	.....	.....	.....	.....	No record.....	.....
15 Bridgeport.....	M. Wood, No. 1.....	428	Kirkwood.....	1,279	54	849	651	1,382	1,341	.....	No record.....
16 Bridgeport.....	M. Wood, No. 3.....	422	.....	.....	.....	.....	.....	.....	.....	.....	do.....
17 Bridgeport.....	M. Wood, No. 8.....	431	Stray.....	1,433	20	1,002	498	.....	1,459	.....	Red rock, 1,300, 1,360 and 1,423 feet.....
18 Bridgeport.....	M. Wood, No. 6.....	435	Bridgeport.....	910	.....	475	1,025	.....	940	.....	.....
			do.....	875	30	445	1,055	.....	.....	.....	.....
			do.....	1,000	75	570	930	.....	.....	.....	.....
			Buchanan.....	1,130	100	700	800	.....	.....	.....	.....
			"Gas".....	1,275	19	845	655	.....	.....	.....	.....
19 Bridgeport.....	M. Wood, No. 13.....	430	Kirkwood.....	1,390	10	950	550	.....	.....	.....	.....
			Tracey.....	1,590	15	1,160	340	.....	.....	.....	.....
			McClosky-1.....	1,670	12	1,240	260	.....	.....	.....	.....
			McClosky-2.....	1,698	7	1,268	232	.....	1,705	.....	Salt water.....

## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
20— S. W.	1	Bridgeport.	Lewis, No. 9.	426	Bridgeport.	877	30	451	1,049	.....	.....	Slate, 892 to 899 feet.
	2	Bridgeport.	Lewis, No. 13.	426	do.	915	18	489	1,011	.....	250	Quit in sand.
	3	Bridgeport.	Lewis, No. 1.	426	do.	800	34	374	1,126	.....	.....	Gas, 1,305 feet.
	4	Bridgeport.	Lewis, No. 12.	422	Kirkwood.	1,279	56	853	1,647	1,319	.....	.....
	5	Bridgeport.	Lewis, No. 4.	420	Bridgeport.	816	20	390	1,110	.....	891	.....
	6	Bridgeport.	Lewis, No. 3.	424	do.	866	20	440	1,060	.....	.....	.....
	7	Bridgeport.	Lewis, No. 20.	424	do.	880	27	458	1,042	.....	.....	.....
	8	Bridgeport.	Lewis, No. 19.	440	do.	913	20	491	1,009	.....	300	Salt water.
	9	Bridgeport.	Lewis, No. 5.	440	do.	968	.....	546	954	.....	.....	.....
	10	Bridgeport.	Lewis, No. 18.	410	do.	877	18	457	1,043	.....	895	.....
	11	Bridgeport.	Lewis, No. 6.	440	do.	872	12	448	1,052	.....	884	.....
					do.	867	68	443	1,057	.....	935	.....
					do.	786	22	346	1,154	.....	.....	.....
					do.	810	25	370	1,130	.....	.....	.....
					do.	867	28	427	1,073	871	50	.....
					do.	898	82	458	1,042	920	.....	.....
					do.	1,004	23	504	986	.....	.....	Salt water, 1,070 feet.
					Buchanan.	1,031	99	591	909	.....	.....	.....
					Stray.	1,159	11	719	781	.....	.....	.....
					Kirkwood-1.	1,322	11	862	618	1,328	.....	.....
					Kirkwood-2.	1,335	2	895	605	.....	.....	.....
					Kirkwood-3.	1,350	26	910	590	1,355	250	.....
					Bridgeport.	917	25	477	1,023	.....	.....	.....
					do.	835	20	395	1,106	.....	.....	.....
					do.	895	85	455	1,045	895	.....	.....
					Buchanan-1.	1,017	113	577	923	.....	.....	Salt water, 1,020 feet.
					Buchanan-2.	1,150	13	710	790	.....	.....	.....
					Kirkwood-1.	1,320	16	890	620	1,325	.....	.....
					Kirkwood-2.	1,341	24	901	599	.....	.....	.....
					Bridgeport.	892	14	462	1,048	1,383	.....	.....
					do.	904	21	464	1,052	.....	.....	Quit in sand.



## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
S. W..	31	E. N. Gillespie	Smith, No. 23.	430	Bridgeport.	837	10	407	1,093	.....	.....	Hole full of water, 837 feet
					do.	900	74	470	1,030	.....	Show	.....
					Kirkwood-1.	1,378	40	948	552	1,378	.....	.....
					Kirkwood-2.	1,445	16	1,015	485	1,445	130	.....
					Bridgeport.	891	10	450	1,050	893	1,473	.....
	32	E. N. Gillespie	Smith, No. 2.	441	do.	915	32	474	1,026	920	.....	.....
					Bridgeport.	875	20	434	1,066	881	.....	No record.
					do.	920	14	479	1,021	925	.....	.....
	33	E. N. Gillespie	Smith, No. 14.	441	do.	890	12	449	1,061	.....	375	.....
					do.	930	55	489	1,011	930	.....	.....
					Buchanan.	1,046	38	605	895	.....	.....	Salt water, 1,090 feet.
	34	E. N. Gillespie	Smith, No. 18.	441	Kirkwood-1.	1,342	2	901	599	.....	Show	Red shale, 1,325 feet.
					Kirkwood-2.	1,360	33	919	581	.....	128	.....
					Bridgeport.	887	21	436	1,064	890	1,427	.....
	35	E. N. Gillespie	Smith, No. 4.	451	do.	925	45	474	1,026	.....	.....	.....
					do.	884	12	433	1,067	.....	.....	.....
					do.	926	21	475	1,025	.....	.....	Salt water, 953 and 1,140 feet.
	36	E. N. Gillespie	Smith, No. 12.	451	do.	953	.....	502	598	.....	.....	.....
					Kirkwood.	1,332	56	881	619	1,388	282	Red rock, 1,318 feet.
					Bridgeport.	882	22	437	1,063	892	.....	.....
	37	E. N. Gillespie	Smith, No. 9.	445	do.	912	69	467	1,033	912	.....	.....
					"Gas".	1,250	18	805	695	.....	.....	Some gas, 1,250 feet.
					Kirkwood-1.	1,290	32	845	655	1,305	.....	.....
	38	E. N. Gillespie	Smith, No. 3.	445	Kirkwood-2.	1,326	25	881	619	.....	116	Red shale, 1,173 feet.
					Bridgeport.	871	12	426	1,074	873	.....	.....
					do.	909	17	464	1,036	909	.....	.....
	39	E. N. Gillespie	Smith, No. 15.	445	do.	885	12	440	860	.....	.....	.....
					do.	909	73	464	1,036	.....	.....	.....
					do.	895	7	422	1,078	902	.....	.....
	40	E. N. Gillespie	Smith, No. 5.	444	do.	900	34	456	1,044	.....	.....	.....
					do.	.....	.....	.....	.....	.....	.....	.....

No.	Locality	Section	Depth	Remarks	Gas	Oil	Water	Other
5	Bridgeport	Eshelman, No. 7	440	Bridgeport	895	80	455	1,045
6	Bridgeport	Eshelman, No. 8	440	"Gas"	1,240	42	890	1,700
7	Bridgeport	Eshelman, No. 4	432	Kirkwood	1,298	42	858	642
				Bridgeport	885	23	445	1,055
				do	852	23	420	1,080
				do	878	23	446	1,054
				do	860	120	422	1,078
8	Bridgeport	Eshelman, No. 16	438	Buchanan	1,050	55	612	888
				"Gas"	1,227	13	789	711
				Kirkwood	1,285	63	847	653
9	Bridgeport	Eshelman, No. 3	438	Bridgeport	862	24	424	1,076
				do	815	33	382	1,118
				do	868	57	435	1,065
				do	940	35	507	993
				do	1,010	13	577	923
10	Bridgeport	Eshelman, No. 17	433	Buchanan	1,058	52	625	875
				Stray	1,135	20	702	798
				Kirkwood	1,297	63	884	636
11	Bridgeport	Eshelman, No. 5	433	do	1,300	29	867	633
12	Bridgeport	Eshelman, No. 1	428	Bridgeport	872	12	444	1,056
				do	820	15	390	1,120
				do	850	26	410	1,090
				do	895	45	455	1,045
				do	992	50	552	948
				do	1,000	18	620	880
				Buchanan	1,100	45	660	840
				Stray	1,160	5	720	780
				do	1,175	8	735	765
13	Bridgeport	Eshelman, No. 18	440	Kirkwood-1	1,346	37	906	594
				Kirkwood-2	1,390	10	950	550
				Kirkwood	1,291	62	845	655
				Stray	1,321	.....	875	625
14	Ohio	Crackle, No. 19	446					
15	Ohio	Crackle, No. 18	446					
16	Ohio	Crackle, No. 5	446	Bridgeport	868	.....	422	1,078
				do	902	15	456	1,044
				do	870	15	421	1,079
17	Ohio	Crackle, No. 1	449	do	906	10	457	1,043
				do	845	20	391	1,109
				do	915	15	461	1,039
18	Ohio	Crackle, No. 17	454	Kirkwood	1,285	.....	831	669
				Bridgeport	850	15	396	1,104
				do	915	15	461	1,039
				do	870	32	415	1,085
				do	885	.....	430	1,070
				do	910	26	455	1,045
19	Ohio	Crackle, No. 4	454					
20	Ohio	Crackle, No. 23	455					
21	Ohio	Crackle, No. 12	455					

## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- vation— feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
22— S. E.	10 Ohio		Dickerson, No. 1.	473	Kirkwood	1,506	14	1,033	467	1,700	1,743	25
	11 Ohio		Dickerson, No. 2.	471	McClosky	1,695	23	1,222	278			Drilling
23— N. E.	1 Snowden Bros.		Vanatta, No. 2.	430	Bridgeport.	800	50	370	1,130			Salt water, 850 feet.
					do.	1,010	100	580	920			Salt water, 1,010 feet.
24— N. E.	1 Ohio		Perry King, No. 42.	434	Buchanan.	1,165	225	735	765			Salt water, 1,375 feet.
					Kirkwood-1.	1,530	35	1,100	400			Salt water and show of oil, 1,618 feet.
24— N. E.	2 Ohio		Perry King, No. 17.	436	Kirkwood-2.	1,600	18	1,170	330			Salt water and show of oil, 1,618 feet.
					Tracey	1,740	25	1,310	190			Light show of oil, 1,945 feet
24— N. E.	3 Ohio		Perry King, No. 9.	451	McClosky	1,945		1,515	—15	1,945	2,590	Dry
					"Gas"	1,307	28	873	627	1,307		
24— N. E.	4 Ohio		Perry King, No. 8.	452	Stray	1,342	8	908	592			
					Kirkwood	1,365	37	931	569	1,385	1,402	142
24— N. E.	5 Ohio		Perry King, No. 32.	433	"Gas"	1,319	99	883	617	1,362	1,418	40
					do.	1,335	6	884	616			
24— N. E.	6 Ohio		Perry King, No. 10.	435	Kirkwood	1,415	24	984	536	1,415		75
					Kirkwood-1.	1,375	20	923	577	1,376		
24— N. E.	7 Ohio		Perry King, No. 13.	429	Kirkwood-2.	1,435	15	983	517	1,440		75
					Kirkwood	1,497	20	1,064	436	1,497	1,549	75
24— N. E.	8 Ohio		Perry King, No. 45.	442	Kirkwood-1.	1,502	20	1,069	431	1,503		100
					Kirkwood-2.	1,530	22	1,097	403	1,535	1,552	Gas well. No gas data.
24— N. E.	9 Ohio		Perry King, No. 10.	435	Kirkwood-1.	1,495	3	1,067	443			Gas
					Kirkwood-2.	1,528	12	1,090	410			Gas
24— N. E.	10 Ohio		Perry King, No. 10.	435	Tracey	1,528	14	1,227	273	1,665	1,679	30
					Kirkwood	1,515	17	1,080	420	1,521	1,532	180
24— N. E.	11 Ohio		Perry King, No. 10.	435	"Gas"	1,449	5	1,014	485	1,449		Gas, 1,515 feet.
					Kirkwood	1,500	17	1,065	435	1,500		
24— N. E.	12 Ohio		Perry King, No. 13.	429	do.	1,513	22	1,084	416	1,513		180
					do.	1,516	23	1,074	426	1,516		126
24— N. E.	13 Ohio		Perry King, No. 45.	442	do.	1,516	23	1,074	426	1,516		120

S. W.	1	Snowden Bros.	O. Jody, No. 1.	130	Bridgeport and Buchanan.	1,020	275	580	920				No record.
	2	Snowden Bros.	Childress, No. 3.	440	"Gas"	1,440	44	1,000	500				Hole full of water, 1,020 feet.
					Kirkwood.	1,516	54	1,076	424		Show		
					Tracey.	1,666	29	1,226	274				
					McClosky.	1,776	7	1,336	164				Salt water, 1,781 feet.
S. E.	3	Snowden Bros.	Childress, No. 4.	455									Drilling.
	4	Snowden Bros.	Childress, No. 5.	445									do.
	1	Ohio.	Perry King, No. 46.	458	Kirkwood.	1,506	41	1,048	452		160		Drilling.
	2	Ohio.	Perry King, No. 47.	453									do.
	3	Ohio.	Perry King, No. 48.	450									
	4	Ohio.	Perry King, No. 6.	441	Kirkwood.	1,516	12	1,076	425				
					McClosky.	1,684	8	1,248	257				
	5	Ohio.	Perry King, No. 7.	444	Kirkwood.	1,491	35	1,047	453			30	
	6	Ohio.	Perry King, No. 3.	478	do.	1,400	53	982	518			20	
	7	Ohio.	Perry King, No. 16.	483	"Gas"	1,354	46	871	629			90	
									1,454			20	
25—													
N. E.	1	Snowden Bros.	Pepple, No. 2.	477	Kirkwood-1.	1,470	8	993	507				T. 4 N., R. 13 W.
					Kirkwood-2.	1,494	7	1,017	483			150	
	2	Snowden Bros.	Pepple, No. 3.	443	Kirkwood-1.	1,500	6	1,057	443			150	
					Kirkwood-2.	1,527	3	1,084	416				
	3	Snowden Bros.	Childress, No. 1.	440	Kirkwood.	1,500		1,060	440			40	
	4	Snowden Bros.	Childress, No. 2.	450									No record.
					Bridgeport.	854	11	399	1,101				
					do.	953	12	498	1,002				
					do.	1,000	15	545	955				
					Bridgeport and Buchanan.								
						1,035	151	580	920				Salt water, 1,035 and 1,163 feet.
	5	Snowden Bros.	Pepple, No. 6.	455	Buchanan.	1,240	62	785	715				Salt water, 1,273 feet.
					"Gas"	1,438	17	978	522				
					Stray.	1,488	6	1,033	467		Show		
					Kirkwood-1.	1,502	15	1,047	453				
					Kirkwood-2.	1,534	9	1,079	421				
					Kirkwood-3.	1,588	5	1,183	367				
					Tracey.	1,612	25	1,157	843				
					McClosky.	1,684	39	1,229	271			150	
					Bridgeport.	790	35	313	1,187				
					do.	990	15	513	987				
					do.	1,035	20	558	442				
					do.	1,115	25	638	682				
					do.	1,200	30	728	777				
					Buchanan-1.	1,250	25	773	727				
					Buchanan-2.	1,300	19	823	677				Hole full of water, 1,315 feet.
					Stray.	1,355	17	878	622				
					"Gas"	1,445	10	968	532				
					Kirkwood-1.	1,500	20	1,023	477				
					Kirkwood-2.	1,580	37	1,053	447				Water and oil, 1,538 feet.



Lawrence County—Petty Township—Continued

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face ele-va-tion—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
29— N. W.	22	Ohio.....	Crackle, No. 7.....	448	Bridgeport.....	865	25	417	1,063	.....	Show	.....
	23	Ohio.....	Crackle, No. 3.....	433	do.....	907	10	459	1,041	982	.....	.....
	24	Ohio.....	Crackle, No. 26.....	443	do.....	858	55	425	1,075	.....	15	.....
	25	Ohio.....	Crackle, No. 2.....	443	Kirkwood.....	905	51	472	1,028	1,305	50	Gas, 1,285 feet.
	26	Ohio.....	Crackle, No. 6.....	449	Bridgeport.....	1,285	9	842	1,658	1,336	.....	Salt water, 983 feet.
	27	Ohio.....	Crackle, No. 28.....	453	do.....	867	20	424	1,076	983	.....	.....
	28	Ohio.....	Crackle, No. 24.....	465	do.....	930	10	487	1,013	.....	.....	.....
	29	Ohio.....	Crackle, No. 13.....	457	do.....	874	12	425	1,075	.....	.....	.....
	30	Ohio.....	Crackle, No. 10.....	473	do.....	922	69	473	1,027	.....	.....	.....
	31	Ohio.....	Crackle, No. 20.....	472	Kirkwood.....	935	18	482	1,018	935	85	.....
	32	Ohio.....	Crackle, No. 8.....	468	Bridgeport.....	1,309	42	856	1,644	1,338	70	.....
	33	Silurian.....	Bowers, No. 4.....	455	do.....	928	86	463	1,037	970	.....	.....
	34	Silurian.....	Bowers, No. 5.....	455	do.....	908	15	451	1,049	996	Show	.....
	35	Silurian.....	Bowers, No. 6.....	458	do.....	883	12	410	1,090	.....	Best	.....
	36	Silurian.....	Bowers, No. 3.....	456	do.....	924	4	451	1,049	.....	Fair	.....
					Bridgeport.....	1,292	39	820	968	1,009	75	Quit in sand. Well abandoned.
					do.....	822	10	354	1,146	1,292	.....	.....
					do.....	908	10	440	1,080	999	.....	.....
					do.....	840	10	385	1,115	.....	.....	.....
					do.....	961	15	526	974	.....	.....	.....
					do.....	810	64	355	1,145	.....	.....	.....
					do.....	831	52	376	1,124	983	.....	.....
					do.....	931	29	476	1,024	.....	Show	.....
					do.....	802	15	344	1,156	.....	50	.....
					do.....	852	34	394	1,106	852	.....	.....
					do.....	906	90	448	1,052	940	.....	.....
					do.....	710	10	254	1,246	.....	.....	Salt water.
					do.....	840	10	384	1,116	840	.....	.....
					do.....	981	.....	525	975	981	.....	.....

N. W.	5 Ohio.....	Johnson, No. 3.....	430	McClosky.....	1, 642	18	1, 212	288	1, 642	1, 664	200	.....
	6 Ohio.....	E. Martin, No. 2.....	427	do.....	1, 645	5	1, 218	282	.....	1, 799	Dry	.....
	7 Ohio.....	E. Martin, No. 1.....	427	Tracey.....	1, 476	45	1, 049	451	.....	1, 521	Gas	Gas, 1,516 feet.
	8 Ohio.....	J. C. Martin, No. 1.....	440	Tracey-2.....	1, 580	10	1, 140	360	1, 642	1, 684	30	Gas, 1,638 feet.
	9 Ohio.....	J. C. Martin, No. 2.....	430	McClosky.....	1, 640	2	1, 210	280	.....	1, 681	Well abandoned.	.....
	10 Ohio.....	Gowin, No. 1.....	430	Tracey.....	1, 500	10	1, 070	430	.....	.....	Gas, 1,500 feet.	.....
	11 Ohio.....	Gowin, No. 3.....	440	McClosky.....	1, 644	20	1, 214	286	1, 644	1, 680	25	.....
	1 Mahutska.....	Gowin, No. 1.....	436	do.....	1, 649	13	1, 209	291	1, 655	1, 665	15	Gas, 1,655 feet.
	2 Ohio.....	Gowin, No. 2.....	438	Tracey.....	1, 505	30	1, 069	431	.....	.....	.....	.....
	3 Ohio.....	Green, No. 2.....	438	do.....	1, 637	27	1, 201	299	1, 642	1, 667	20	.....
	4 Ohio.....	Green, No. 1.....	440	McClosky.....	1, 634	18	1, 196	304	1, 634	1, 657	50	.....
S. W.	1 Ohio.....	Nuttall, No. 1.....	434	Tracey.....	1, 505	20	1, 067	433	.....	.....	.....	.....
	2 Ohio.....	Nuttall, No. 2.....	433	McClosky.....	1, 625	25	1, 187	313	1, 625	1, 661	100	.....
	3 Ohio.....	Nuttall, No. 4.....	437	Tracey.....	1, 535	.....	1, 095	405	.....	1, 858	Dry	.....
	4 Ohio.....	Nuttall, No. 3.....	437	do.....	1, 503	45	1, 069	431	.....	.....	Gas, 1,506 feet.	.....
	5 Ohio.....	Mefford, No. 1.....	438	McClosky.....	1, 606	44	1, 172	328	1, 613	1, 658	150	.....
	6 Mahutska.....	W. Updike, No. 6.....	438	Tracey.....	1, 478	50	1, 045	455	.....	.....	Gas, 1,525 feet.	.....
	7 Mahutska.....	W. Updike, No. 1.....	438	McClosky.....	1, 601	46	1, 168	332	1, 635	1, 647	150	.....
	8 Mahutska.....	W. Updike, No. 3.....	438	Tracey.....	1, 615	.....	1, 178	322	1, 615	1, 653	65	Gas, 1,615 feet.
	9 Mahutska.....	W. Updike, No. 2.....	438	Tracey.....	1, 510	22	1, 073	427	.....	1, 532	Gas	Gas, 1,510 feet.
	10 Mahutska.....	W. Updike, No. 5.....	438	do.....	1, 512	23	1, 074	426	.....	1, 540	Gas	Gas, 1,512 feet.
	11 Ohio.....	Mefford No. 2.....	438	do.....	1, 478	57	1, 040	460	.....	.....	.....	.....
	1 Ohio.....	S. Updike (10), No. 1.....	429	McClosky.....	1, 610	37	1, 172	328	.....	1, 652	60	Gas, 1,520 feet.
	2 Haywood.....	S. Updike, No. 1.....	428	Tracey.....	1, 520	10	1, 082	418	.....	.....	.....	.....
S. E.	3 Haywood.....	S. Updike, No. 3.....	428	McClosky.....	1, 617	16	1, 179	321	.....	1, 670	50	.....
	4 Ohio.....	R. Shipman, No. 2.....	428	Tracey.....	1, 507	.....	1, 089	431	.....	.....	.....	.....
	5 Ohio.....	R. Shipman, No. 1.....	428	Tracey.....	1, 616	32	1, 178	322	1, 652	1, 654	20	.....
	6 Ohio.....	Steffy, No. 1.....	426	McClosky.....	1, 493	32	1, 055	445	.....	.....	.....	.....
	7 Ohio.....	Steffy, No. 2.....	426	Tracey.....	1, 611	39	1, 173	327	.....	1, 645	1	Well abandoned.
	8 Ohio.....	Johnson, No. 4.....	432	McClosky.....	1, 507	8	1, 069	431	.....	.....	.....	.....
	9 Ohio.....	Johnson, No. 1.....	435	Tracey.....	1, 603	45	1, 165	335	.....	1, 656	50	.....
	10 Ohio.....	Johnson, No. 5.....	430	Tracey.....	1, 483	17	1, 045	455	.....	.....	.....	Gas, 1,483 to 1,500 feet.
	11 Haywood.....	S. Updike, No. 4.....	428	do.....	1, 613	17	1, 175	325	1, 618	1, 636	75	.....
	12 Haywood.....	S. Updike, No. 5.....	428	do.....	1, 622	48	1, 183	307	1, 622	1, 670	60	.....
	13 Haywood.....	S. Updike, No. 2.....	429	do.....	1, 618	13	1, 190	310	.....	1, 657	150	.....
				do.....	1, 630	21	1, 202	298	1, 635	1, 674	75	.....
				do.....	1, 637	23	1, 209	291	1, 632	1, 680	30	.....
26— N. E.	1 Ohio.....	M. Coder, No. 1.....	437	Tracey.....	1, 496	.....	1, 088	432	.....	.....	.....	Gas, 1,496 feet.
	2 Ohio.....	Kimmel, No. 1.....	437	McClosky.....	1, 616	27	1, 188	312	1, 616	1, 651	105	.....
	3 Ohio.....	Rodrick, No. 1.....	438	Tracey.....	1, 496	.....	1, 070	430	.....	.....	.....	Gas, 1,496 feet.
				do.....	1, 620	39	1, 194	306	1, 625	1, 662	120	.....
				do.....	1, 630	30	1, 204	296	.....	1, 666	80	.....
				do.....	1, 640	20	1, 208	292	1, 640	1, 683	70	.....
				do.....	1, 645	25	1, 210	290	1, 680	1, 682	150	.....
				do.....	1, 632	16	1, 202	298	1, 632	1, 648	40	Gas, 1,632 feet.
				do.....	1, 640	25	1, 212	288	.....	1, 675	75	.....
				do.....	.....	.....	.....	.....	.....	1, 731	Dry	No regular sands.
				McClosky.....	1, 630	31	1, 201	299	1, 634	1, 674	50	.....
				Tracey.....	1, 568	14	1, 131	369	1, 568	1, 582	60	T. 5 N., R. 13, W.
				do.....	1, 572	18	1, 135	365	.....	1, 600	15	Gas, 1,572 feet.
				do.....	1, 543	17	1, 105	395	1, 543	1, 562	25	.....

## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
26— N. W. S. W.	1	Ohio.....	T. Smith, No. 1.....	438	Tracey.....	1,578	23	1,141	359	1,578	85	No record.....
	1	Ohio.....	Armitage, No. 1.....	437	do.....	1,574	29	1,140	360	1,586	35	Gas, 1,585 feet.....
	2	Ohio.....	Armitage, No. 2.....	434	Kirkwood.....	1,500	30	1,065	435	1,591		Salt water.....
	3	Central Refining Co.....	G. Waggoner, No. 2.....	435	Tracey.....	1,584	26	1,129	371	1,570		Red rock, 1,555 feet.....
	4	Central Refining Co.....	G. Waggoner, No. 1.....	436	McClosky-1.....	1,579	12	1,143	357	1,622		Salt water, 1,622 feet.....
	5	Central Refining Co.....	Paddic, No. 1.....	436	McClosky-2.....	1,630	10	1,194	308			Salt water.....
S. E.—					do.....	1,655	15	1,219	281			do.....
					Tracey.....	1,560	25	1,114	386			do.....
					Stray.....	1,584	11	1,148	352			
					McClosky.....	1,598	37	1,162	338	1,658		Dry Salt water, 1,588 feet.....
	1	Ohio.....	Kettleman, No. 3.....	437	Tracey.....	1,548	32	1,111	389	1,580	117	Gas, 1,548 feet.....
	2	Ohio.....	Kettleman, No. 2.....	435	do.....	1,562	20	1,127	373	1,582	105	
29— N. E.—	3	Ohio.....	Kettleman, No. 1.....	439	do.....	1,564	14	1,126	375	1,578	75	
	4	Ohio.....	Kettleman, No. 4.....	436	do.....	1,557	20	1,121	379	1,560	37	Gas, 1,557 feet.....
	1	Silurian.....	Greenlee, No. 2.....	465	Bridgeport.....	900	50	435	1,075			Salt water.....
					Kirkwood.....	1,512	39	1,047	453	1,542	30	Gas, 1,542 feet. Red shale 1,365 feet.....
	2	Ohio.....	Greenlee, No. 1.....	476	Bridgeport.....	900	50	424	1,076			
					Kirkwood.....	1,523	52	1,047	453		40	Red shale, 1,375 feet.....
					Bridgeport.....	710	55	260	1,240			Salt water, 719 feet.....
					do.....	912	33	462	1,038			
					do.....	965	70	505	905			Broken sand, 955 to 1,915 feet. Salt water, 1,015 to 1,025 feet.....
	3	Bridgeport.....	Eshelman, No. 14.....	450	do.....	1,040	33	590	910			Salt water.....
					Buchanan.....	1,176	100	726	775			
					"Gas".....	1,300	10	850	650			
					Kirkwood.....	1,468	37	1,018	482	1,512		



## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
29— N. E..	14	Silurian.....	Dalrymple, No. 2.....	470	Bridgeport.....	880	20	410	1,090	.....	.....	.....	.....
					do.....	930	15	460	1,040	.....	.....	.....	.....
					do.....	970	30	500	1,000	.....	.....	Show	Salt water.
					do.....	1,030	30	560	940	.....	.....	.....	Red rock, 1,260 feet.
					Stray.....	1,245	10	775	726	.....	.....	.....	.....
					"Gas".....	1,302	15	832	668	.....	.....	.....	.....
					Stray.....	1,360	15	890	610	.....	.....	Show	.....
					Kirkwood.....	1,396	48	926	574	1,396	.....	.....	.....
					Bridgeport.....	730	20	243	1,257	.....	.....	.....	.....
					do.....	890	20	403	1,097	.....	.....	.....	Salt water.
N. W..	15	Silurian.....	Dalrymple, No. 4.....	487	Buchanan.....	1,150	60	663	837	.....	.....	.....	Salt water.
					"Gas".....	1,390	5	903	597	1,390	.....	Show	Salt water.
					Kirkwood-1.....	1,450	15	963	537	.....	.....	.....	Red rock, 1,280 feet.
					Kirkwood-2.....	1,471	24	984	516	.....	1,519	50	.....
					Bridgeport.....	780	20	280	1,220	.....	.....	.....	Salt water.
					do.....	965	20	495	1,015	.....	.....	.....	.....
					do.....	1,060	126	550	950	.....	.....	.....	Salt water, 1,050 feet.
					Buchanan.....	1,280	145	730	770	.....	.....	.....	Red rock, 1,360 feet.
					"Gas".....	1,442	8	942	558	1,442	.....	Show	.....
					Kirkwood.....	1,500	35	1,000	500	.....	1,550	130	.....
N. W..	1	Bridgeport.....	Eshelman, No. 11.....	426	Bridgeport.....	900	59	474	1,026	920	959	.....	Salt water, 970 feet.
					do.....	898	110	470	1,030	905	.....	.....	Red rock, 1,215 and 1,350 feet.
	2	Bridgeport.....	Eshelman, No. 9.....	428	"Gas".....	1,303	18	875	626	.....	.....	.....	Broken sand, 1,374 to 1,406 feet.
					Kirkwood.....	1,355	19	927	573	1,357	1,406	418	Salt water, 1,030 feet.
	3	Bridgeport.....	Eshelman, No. 6.....	430	Bridgeport.....	893	39	463	1,037	.....	.....	.....	Slate and red rock, 1,305 to 1,332 feet.
					Kirkwood.....	1,332	23	902	596	1,332	1,383	.....	.....
	4	Bridgeport.....	Eshelman, No. 2.....	440	Bridgeport.....	856	14	416	1,066	.....	.....	.....	.....
					do.....	895	6	445	1,056	.....	.....	.....	.....
					do.....	901	44	401	1,039	.....	945	.....	Quilt in sand.



Lawrence County—Petty Township—Continued

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.				
29— N. W.	22	Ohio.....	Crackle, No. 7.....	448 {	Bridgeport.....	865	25	417	1,083	982	Show	.....
	23	Ohio.....	Crackle, No. 3.....	433 {	do.....	907	10	459	1,041	.....	.....	.....
	24	Ohio.....	Crackle, No. 26.....	443 {	do.....	853	55	425	1,075	.....	15	.....
	25	Ohio.....	Crackle, No. 2.....	443 {	Kirkwood.....	905	51	472	1,028	1,336	50	Gas, 1,285 feet.....
	26	Ohio.....	Crackle, No. 6.....	449 {	Bridgeport.....	1,285	9	842	1,658	.....	.....	.....
	27	Ohio.....	Crackle, No. 28.....	453 {	do.....	967	20	424	1,076	983	.....	Salt water, 983 feet.....
	28	Ohio.....	Crackle, No. 24.....	465 {	do.....	930	12	487	1,013	.....	.....	.....
	29	Ohio.....	Crackle, No. 13.....	457 {	do.....	874	10	425	1,075	.....	.....	.....
	30	Ohio.....	Crackle, No. 10.....	473 {	do.....	922	60	473	1,027	.....	.....	.....
	31	Ohio.....	Crackle, No. 20.....	472 {	Kirkwood.....	935	18	482	1,018	935	85	.....
	32	Ohio.....	Crackle, No. 8.....	468 {	Bridgeport.....	1,309	42	856	1,644	1,309	70	.....
	33	Silurian.....	Bowers, No. 4.....	455 {	do.....	928	86	463	1,037	970	.....	.....
	34	Silurian.....	Bowers, No. 5.....	455 {	do.....	908	10	451	1,049	996	Show	.....
	35	Silurian.....	Bowers, No. 6.....	458 {	do.....	833	12	410	1,090	.....	Best	.....
	36	Silurian.....	Bowers, No. 3.....	456 {	do.....	924	4	451	1,049	.....	Fair	.....
					Kirkwood.....	1,006	39	532	968	1,009	75	.....
					Bridgeport.....	1,292	10	820	680	1,292	.....	.....
					do.....	822	10	354	1,146	999	.....	.....
					do.....	908	10	440	1,060	.....	.....	.....
					do.....	940	10	385	1,115	.....	.....	.....
					do.....	981	16	526	974	.....	.....	.....
					do.....	810	64	355	1,145	.....	.....	.....
					do.....	881	52	376	1,124	.....	.....	.....
					do.....	931	29	476	1,024	983	Quit in sand. Well abandoned.....	.....
					do.....	802	15	344	1,156	.....	Show	.....
					do.....	852	34	394	1,106	852	80	.....
					do.....	906	90	448	1,052	940	.....	.....
					do.....	710	10	254	1,246	.....	.....	.....
					do.....	840	10	384	1,116	840	.....	Salt water.....
					do.....	981	.....	525	975	981	.....	.....







S. E. ...	19-Ohio.	Lewis, No. 22.	534'	1,399'	17	555	645	1,359	1,408	100	
	20-Ohio.	Lewis, No. 5.	533	1,387	58	354	1,146	912	.....	50	Salt water, 1,049 feet.
	21-Ohio.	Lewis, No. 20.	508	1,303	18	705	705	.....	.....	70	Gas, 1,203 feet.
	22-Ohio.	Lewis, No. 2.	508	1,365	31	857	643	1,365	1,401	.....	.....
				811	14	343	1,107	.....	.....	.....	.....
				870	16	362	1,138	.....	886	.....	Salt water, 873 feet. Well abandoned.
	1-Silurian.	Neal No. 1.	498	1,270	47	772	728	1,270	.....	Gas	Gas, 1,270 feet. Red rock, 1,220 feet.
	2-Silurian.	Neal, No. 4.	504	885	10	381	1,119	.....	.....	50	Quit in sand.
	3-Silurian.	Neal, No. 8.	490	1,015	25	511	866	.....	1,055	.....	Quit in sand.
				987	34	497	1,003	962	1,021	.....	Show
				750	158	248	1,252	895	.....	.....	Salt water, 905 feet.
				1,020	35	518	853	.....	.....	.....	.....
				1,175	55	673	827	.....	.....	.....	.....
	4-Silurian.	Neal, No. 7.	502	1,175	65	673	827	.....	.....	.....	.....
				1,862	8	860	640	1,862	.....	.....	.....
				1,400	20	958	542	1,400	.....	.....	.....
				1,506	18	1,004	496	1,506	1,526	180	.....
				700	240	1,270	1,230	780	.....	.....	.....
	5-Silurian.	Neal, No. 6.	490	1,100	100	610	890	.....	.....	.....	.....
				1,350	26	890	640	1,350	.....	.....	.....
				1,420	40	930	570	1,420	1,462	225	.....
				920	20	431	1,038	.....	.....	.....	.....
				1,220	30	731	769	.....	.....	.....	Salt water.
	6-Silurian.	Neal, No. 5.	496	1,365	10	806	604	1,365	.....	.....	do.
				1,442	50	953	547	.....	1,492	.....	Quit in sand.
				1,201	8	824	776	.....	.....	.....	.....
	7-Silurian.	Neal, No. 2.	467	1,200	8	803	637	1,335	1,390	.....	Show
				975	15	518	953	.....	.....	.....	Quit in sand.
				1,120	25	673	827	.....	.....	.....	Salt water.
				1,190	108	753	707	.....	.....	.....	.....
	8-Silurian.	Neal, No. 3.	457	1,306	20	848	652	1,306	.....	.....	Red rock, 1,300 feet.
				1,376	24	919	551	1,376	.....	.....	.....
				1,435	15	978	522	1,435	.....	.....	.....
				1,490	27	982	518	1,490	1,517	50	.....
				1,435	8	913	587	.....	.....	.....	.....
	9-Ohio.	Middaugh, No. 4.	508	1,505	20	982	517	1,505	1,528	75	.....
	10-Ohio.	Middaugh, No. 6.	522	1,410	30	892	608	.....	.....	.....	.....
				1,540	18	1,022	478	1,540	1,579	140	.....
	11-Ohio.	Middaugh, No. 7.	518	1,007	27	615	995	1,015	1,034	125	.....
	12-Ohio.	Middaugh, No. 5.	492	1,460	18	944	566	.....	.....	.....	.....
				1,525	29	1,009	491	1,525	1,554	50	.....
	13-Ohio.	Middaugh, No. 3.	516	1,517	32	1,014	486	1,517	1,586	150	.....
	14-Ohio.	Middaugh, No. 8.	503	1,507	30	1,014	496	1,507	1,528	60	.....
	15-Ohio.	Middaugh, No. 2.	488	862	18	361	1,139	.....	.....	.....	.....
				874	26	380	1,117	874	.....	.....	.....
	16-Ohio.	Middaugh, No. 1.	491	1,522	21	1,031	490	1,522	1,543	200	.....

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur- face ele- va- tion— feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
30— N. E...	1	Bridgeport.....	Miller, No. 4.....	454 {	Bridgeport.....	864	62	410	1,090	964	.....	.....	Slate, 894 to 896 feet.....
	2	Bridgeport.....	Miller, No. 8.....	453 {	do.....	940	24	486	1,014	.....	.....	250	T. 4. N. R. 12 W.....
	3	Bridgeport.....	Miller, No. 5.....	453 {	"Gas".....	1,216	9	763	737	.....	.....	.....	.....
	4	Bridgeport.....	Miller, No. 13.....	448 {	Kirkwood.....	1,285	35	832	668	1,287	1,344	250	Red rock, 1,255 feet.....
	5	Bridgeport.....	Miller, No. 6.....	449 {	Bridgeport.....	927	35	474	1,028	.....	998	.....	.....
	6	Bridgeport.....	Miller, No. 14.....	440 {	do.....	830	15	382	1,118	.....	.....	.....	.....
	7	Bridgeport.....	Miller, No. 12.....	437 {	do.....	871	19	423	1,017	.....	.....	.....	.....
	8	Bridgeport.....	Boyd, No. 12.....	440 {	do.....	895	50	447	1,053	910	.....	.....	.....
	9	Bridgeport.....	Boyd, No. 11.....	452 {	do.....	955	5	507	993	.....	960	.....	.....
	10	Bridgeport.....	Boyd, No. 5.....	450 {	do.....	937	30	488	1,012	.....	1,313	80	30,000 barrels oil from this well in 2 years.....
	11	Bridgeport.....	Boyd, No. 2.....	451 {	"Gas".....	1,200	5	751	749	.....	.....	.....	Gas, 1,200 feet.....
					Bridgeport.....	803	12	363	1,137	.....	.....	.....	Broken sand, 935 to 965 feet.....
					do.....	850	115	410	1,090	842	.....	.....	.....
					do.....	835	20	398	1,102	875	.....	.....	.....
					do.....	870	20	433	1,067	.....	.....	.....	.....
					do.....	930	21	493	1,007	.....	951	.....	.....
					do.....	825	6	385	1,115	825	.....	Show	.....
					do.....	870	48	439	1,070	890	.....	Show	Broken sand, 885 to 918 feet.....
					do.....	928	.....	488	1,012	928	.....	.....	.....
					do.....	945	20	505	995	945	965	.....	.....
					do.....	830	13	378	1,122	.....	.....	.....	.....
					do.....	876	76	424	1,076	{ 895 } { 933 }	952	.....	Quit in sand.....
					do.....	829	61	379	1,121	.....	.....	.....	.....
					do.....	920	35	470	1,030	.....	.....	.....	Salt water, 846 feet.....
					"Gas".....	1,240	.....	700	710	.....	.....	.....	Salt water, 960 to 1,030 feet.....
					Kirkwood.....	1,303	41	853	647	1,305	1,352	125	.....
					Bridgeport.....	1,877	.....	426	1,074	.....	.....	.....	.....
					do.....	935	51	484	1,016	935	990	.....	.....

12	Bridgeport.....	Boyd No. 9.....	455	Bridgeport.....	775	60	320	1, 180	.....	.....	.....	Broken sand, 775 to 825 feet.....
	do.....			do.....	886	19	431	1, 089	.....	.....	.....	
	do.....			do.....	908	17	453	1, 047	.....	.....	.....	
13	Bridgeport.....	Boyd, No. 4.....	456	do.....	935	30	480	1, 020	950	.....	.....	
	do.....			do.....	808	25	352	1, 148	.....	.....	.....	Quit in salt water sand.....
	do.....			do.....	925		469	1, 031	988	960	.....	Salt water, 855 feet.....
	do.....			do.....	841	16	388	1, 112	.....	.....	.....	
14	Bridgeport.....	Baltzell, No. 8.....	453	do.....	867	71	434	1, 066	907	.....	.....	
	do.....			do.....	968	28	515	985	.....	.....	.....	Salt water, 975 feet.....
	Buchanan.....			do.....	1, 041		588	912	.....	1, 057	.....	Salt water, 1, 050 feet.....
15	Bridgeport.....	Baltzell, No. 3.....	458	Bridgeport.....	1, 878		420	1, 080	900	.....	Light	
	do.....			do.....	925		467	1, 033	925	.....	120	
	do.....			do.....	965		507	983	985	.....	Light	
	do.....			do.....	918	14	453	1, 047	.....	.....	.....	
16	Bridgeport.....	Baltzell, No. 1.....	465	do.....	956	25	491	1, 009	.....	.....	.....	Flowing well.....
	do.....			do.....	1, 000	75	535	985	.....	.....	.....	
	Buchanan.....			do.....	1, 800	20	328	1, 172	800	.....	Show	
17	Bridgeport.....	Baltzell, No. 12.....	472	Bridgeport.....	840	40	368	1, 132	.....	.....	.....	
	do.....			do.....	885	105	413	1, 087	{ 900 } 948	985	.....	Broken sand.....
18	Bridgeport.....	Baltzell, No. 5.....	460	do.....	765	25	285	1, 205	.....	.....	.....	
19	Bridgeport.....	Baltzell, No. 13.....	463	do.....	912	8	452	1, 048	912	941	160	Drilling.....
20	Bridgeport.....	Baltzell, No. 2.....	460	do.....								No record.....
	do.....			do.....							Show	
21	Bridgeport.....	Baltzell, No. 10.....	465	do.....	765	4	300	1, 200	765	.....	.....	
	do.....			do.....	810	10	345	1, 145	.....	.....	.....	
	do.....			do.....	864	20	389	1, 111	.....	.....	.....	
	do.....			do.....	905	20	440	1, 060	905	.....	Light	
	do.....			do.....	960	24	485	1, 015	955	980	Best	
	do.....			do.....	765	25	298	1, 202	770	.....	.....	
	do.....			do.....	835	25	368	1, 132	.....	.....	.....	
	do.....			do.....	908	31	441	1, 059	908	.....	.....	
22	Bridgeport.....	Baltzell, No. 11.....	467	do.....	952	83	485	1, 015	958	.....	.....	Gas, 958 feet.....
	do.....			do.....	1, 102	18	635	865	.....	.....	.....	
	Buchanan.....			do.....	1, 170	27	703	797	.....	.....	.....	Salt water.....
	Stray.....			do.....	1, 240	8	773	727	.....	.....	.....	Gas, 1, 240 feet.....
	"Gas".....			do.....	1, 314	33	847	653	1, 318	1, 365	.....	Red rock, 1, 309 feet.....
	Kirkwood.....			do.....	815	5	323	1, 177	.....	.....	.....	
	Bridgeport.....			do.....	850	87	358	1, 142	.....	.....	.....	Broken sand 850 to 904 and 914 to 930 feet.....
23	Bridgeport.....	Baltzell, No. 9.....	492	do.....							.....	Gas, 1, 000 feet. Quit in white sand.....
	do.....			do.....	991	29	499	1, 001	1, 000	1, 020	.....	
	do.....			do.....	945	18	453	1, 047	850	.....	Light	Gas, 1, 015 feet. Salt water
	do.....			do.....	1, 010	50	518	982	.....	.....	.....	1, 060 feet.....
24	Bridgeport.....	Baltzell, No. 7.....	492	Kirkwood.....	1, 361	41	869	631	1, 365	.....	.....	Red rock, 1, 220 and 1, 346 feet.....
	do.....			do.....							.....	
	Tracey.....			do.....	1, 510	10	1, 018	482	.....	.....	.....	Gas, 1, 515 feet.....
	McClosky.....			do.....	1, 575	20	1, 083	417	.....	1, 595	Gas	Gas, 1, 590 feet.....
25	Ohio.....	Crackle, No. 14.....	468	Bridgeport.....	794	40	326	1, 174	.....	990	.....	

Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
30— N. E..	26	Ohio.....	Crackle, No. 29 .....	468	Bridgeport.....	935	70	467	1,033	1,291	.....	.....	.....
					Kirkwood.....	1,291	46	823	677	1,407	.....	.....	.....
					Tracey.....	1,404	12	936	564	1,428	250	.....	.....
	27	Ohio.....	Crackle, No. 30 .....	466	Bridgeport.....	932	75	466	1,034	.....	.....	.....	.....
					Kirkwood.....	1,311	15	845	655	1,311	.....	.....	.....
					Tracey.....	1,392	21	926	574	1,392	90	.....	.....
	28	Ohio.....	Crackle, No. 16 .....	470	Bridgeport.....	908	12	438	1,062	.....	.....	.....	.....
					do.....	930	6	460	1,040	.....	.....	.....	.....
					do.....	964	9	494	1,006	.....	.....	.....	.....
	29	Ohio.....	Crackle, No. 21 .....	469	Kirkwood.....	1,295	37	826	674	1,295	70	.....	.....
N. W..	30	Ohio.....	Crackle, No. 11 .....	469	Bridgeport.....	870	125	401	1,099	970	.....	.....	.....
	31	Ohio.....	Crackle, No. 25 .....	458	do.....	928	36	470	1,030	930	70	.....	.....
					do.....	869	.....	416	1,084	.....	.....	.....	.....
	32	Ohio.....	Crackle, No. 9 .....	453	do.....	915	10	462	1,038	.....	.....	.....	.....
					do.....	935	13	482	1,018	.....	.....	.....	.....
	33	Ohio.....	Crackle, No. 22 .....	440	do.....	871	30	431	1,099	875	5	Produced salt water the first day.....	.....
					do.....	807	13	358	1,142	.....	.....	.....	.....
	34	Ohio.....	Crackle, No. 15 .....	449	do.....	918	2	469	1,031	.....	.....	.....	.....
					do.....	945	20	496	1,004	.....	.....	.....	.....
	35	Ohio.....	Crackle, No. 27 .....	464	do.....	914	14	450	1,050	920	30	.....	.....
N. W..					do.....	960	25	496	1,004	970	.....	.....	.....
	1	Bridgeport.....	Boyd, No. 6 .....	439	do.....	810	43	371	1,129	.....	.....	.....	.....
					do.....	910	71	471	1,029	921	.....	.....	.....
	2	Bridgeport.....	Boyd, No. 3 .....	436	Kirkwood.....	1,290	38	851	1,295	1,341	.....	.....	.....
					Bridgeport.....	810	3	374	1,126	.....	.....	.....	.....
					do.....	883	30	447	1,053	903	40	.....	.....
N. W..	3	Bridgeport.....	Boyd, No. 8 .....	439	do.....	800	.....	361	1,139	.....	.....	.....	.....
					do.....	910	.....	471	1,029	920	.....	.....	.....
					Kirkwood.....	1,317	46	878	622	.....	.....	.....	.....
	4	Bridgeport.....	Boyd, No. 1 .....	433	do.....	1,338	6	906	695	.....	.....	.....	.....

15 Bridgeport.	Whipack, No. 3.	466	915	851	449	1,019	940	Light	Salt water, 905 feet.
		1,448	4	982	508	1,463			
16 Bridgeport.	Whipack, No. 1.	496	1,500	20	1,004	1,600	1,654	25	Gas, 1,685 feet.
		1,585	33	1,119	381	1,611	1,619		Salt water, 1,135 and 1,526 feet.
		1,496		1,009	491	1,619			
17 Bridgeport.	Whipack, No. 2.	466	1,380	30	994	1,584		Light	Gas, 1,604 feet.
		1,400	30	1,029	471	1,468			
		1,594	28	1,128	472	1,600			Salt water, 1,750 feet.
		1,679	121	1,213	287	1,663	1,800		
18 Ohio.	Madding, No. 8.	486	1,403	41	976	1,524			Gas, 1,603 feet.
		1,503		1,107	993	1,604	1,662	150	
19 Ohio.	Madding, No. 9.	464	1,633	9	1,197	303	1,084		Gas, 1,675 feet.
		1,599	33	1,125	375	1,673	1,735	283	
		1,672	12	1,208	362	1,673	1,735		Gas, 1,675 feet.
1 Pemberton.	Pemberton, No. 4.	519	837	6	318	1,082	970	150	Well abandoned.
		970	27	461	1,049	970	997		
2 Pemberton.	Pemberton, No. 15.	518	950	75	432	1,068	970		
		970	35	461	1,049	970			Salt water, 1,050 feet.
3 Pemberton.	Pemberton, No. 3.	519	1,050	35	531	969	1,460		
		1,436		906	504	1,195			
		894	15	304	1,195				
4 Pemberton.	Pemberton, No. 3.	530	917	20	387	1,113			
		977	20	447	1,063			150	Salt water, 997 to 1,017 feet.
		858	37	328	1,179				
5 Pemberton.	Pemberton, No. 7.	530	1,010	12	480	1,020			Salt water.
		1,006	118	545	685				Gas, 1,345 feet.
		1,846		815	685				Red rock, 1,275 feet.
		1,421	41	801	608	1,472			
6 Pemberton.	Pemberton, No. 1.	537	830	11	299	1,201			Well abandoned.
		931	15	394	1,105				
		967	26	420	1,070				
		998	11	461	1,089				
		960	26	329	1,171				
		905	44	368	1,123				
		1,035	40	498	1,002				Salt water.
		1,330	28	765	707				Red rock, 1,250 and 1,280 feet.
7 Pemberton.	Pemberton, No. 6.	537	1,391	24	354	646	1,426		
		904	46	307	1,133	925			
8 Pemberton.	Pemberton, No. 16.	537	972	37	435	1,095	1,009		
		920	15	300	1,200				
		903	18	383	1,117				
		949		439	1,016				
9 Pemberton.	Pemberton, No. 2.	530	964	494	1,096			150	



15	Bridgeport.	Whipsky, No. 3.	466	Bridgeport. Kirkwood-1. Kirkwood-2. Tracey-1. Tracey-2. Kirkwood.	915 1, 448 1, 460 1, 560 1, 585 1, 495	55 4 22 20 33 .....	449 982 994 1, 094 1, 119 1, 009	1, 019 518 506 406 381 491	940 1, 465 1, 560 1, 611 1, 519	..... ..... Light ..... 25	Salt water, 965 feet. ..... ..... Gas, 1,585 feet. Salt water, 1,135 and 1,526 feet.
16	Bridgeport.	Whipsky, No. 1.	486	"Gas" Kirkwood-1. Kirkwood-2. Tracey.	1, 380 1, 460 1, 495 1, 594	..... 30 10 28	914 994 1, 029 1, 128	586 506 471 472	1, 384 1, 463 ..... 1, 600	..... Light ..... .....	..... ..... ..... Gas, 1,594 feet. Salt water, 1,750 feet.
17	Bridgeport.	Whipsky, No. 2.	466	McClosky.	1, 679	121	1, 213	287	1800 { 1683 1724 }	.....	.....
18	Ohio.	Madding, No. 8.	486	Kirkwood. Tracey. McClosky.	1, 462 1, 593 1, 683	41 ..... 9	976 1, 107 1, 197	524 393 303	..... ..... 1, 692	..... ..... 150	..... Gas, 1,593 feet. .....
19	Ohio.	Madding, No. 9.	464	Tracey. McClosky.	1, 589 1, 672	33 12	1, 125 1, 208	375 292	..... 1, 672	285	Gas, 1,675 feet.
1	Pemberton.	Pemberton, No. 4.	519	Bridgeport. do.	837 937	5 10	318 418	1, 182 1, 082	..... .....	.....	.....
2	Pemberton.	Pemberton, No. 15.	518	do. do.	970 960	27 75	451 432	1, 049 1, 068	970 970	150	Well abandoned.
3	Pemberton.	Pemberton, No. 8.	519	do. do.	970 1, 050	35 .....	451 531	1, 049 989	..... .....	.....	Salt water, 1,050 feet.
4	Pemberton.	Pemberton, No. 3.	530	Kirkwood. Bridgeport. do.	1, 425 834 894	15 20 20	594 304 364	..... 1, 196 1, 136	1, 469 ..... .....	.....	.....
5	Pemberton.	Pemberton, No. 7.	530	do. do. do.	917 977 858	20 20 27	387 447 328	1, 113 1, 053 1, 172	..... ..... .....	150	Salt water, 997 to 1,017 feet.
6	Pemberton.	Pemberton, No. 1.	537	do. do. do.	1, 010 1, 095 1, 345	12 115 .....	480 565 815	1, 020 935 685	..... ..... .....	.....	Salt water. Gas, 1,345 feet. Red rock, 1,275 feet.
7	Pemberton.	Pemberton, No. 6.	537	"Gas" Kirkwood. Bridgeport. do.	1, 421 833 931	41 11 15	891 299 394	609 1, 201 1, 106	1, 472 ..... .....	.....	.....
8	Pemberton.	Pemberton, No. 16.	537	do. do. do.	967 998 866	26 11 26	430 461 329	1, 070 1, 039 1, 171	..... ..... .....	250	Well abandoned.
9	Pemberton.	Pemberton, No. 2.	520	do. do. do.	905 1, 035 1, 330	44 40 26	368 498 793	1, 182 1, 002 707	..... ..... .....	.....	Salt water. Red rock, 1,250 and 1,280 feet.
				Kirkwood. Bridgeport. do.	1, 391 904 972	34 46 37	854 367 435	646 1, 133 1, 066	1, 425 925 1, 009	.....	.....
				do. do. do.	820 903 959	15 18 20	300 383 439	1, 200 1, 117 1, 016	..... ..... .....	.....	.....
				do.	984	20	464	1, 086	.....	150	.....

S. E....



## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
30— S; E...	30	Bridgeport.....	Willey, No. 3.....	514	Bridgeport.....	900	35	386	1,114	.....	.....	.....	.....
					..do.....	955	13	441	1,059	.....	1,037	.....	.....
					..do.....	980	.....	476	1,024	.....	.....	.....	.....
	31	Curtis, Akin & Co.....	Fitch, No. 5.....	504	..do.....	1,003	.....	499	1,001	.....	.....	Gas	Red rock, 1,380 feet.....
					"Gas".....	1,320	25	816	684	.....	.....	.....	.....
					Kirkwood.....	1,387	6	888	617	.....	.....	.....	.....
					Bridgeport.....	775	10	273	1,227	.....	.....	.....	.....
					..do.....	845	9	343	1,157	.....	.....	.....	.....
					..do.....	864	35	362	1,138	.....	.....	.....	.....
					..do.....	915	10	413	1,087	915	.....	.....	.....
					..do.....	960	12	458	1,042	968	.....	.....	Gas, 968 feet.....
					..do.....	1,025	19	523	977	1,030	.....	.....	Salt water, 1,075 feet.....
	32	Curtis, Akin & Co.....	Fitch, No. 9.....	502	..do.....	1,065	30	563	937	.....	.....	.....	.....
					Buchanan-1.....	1,135	17	633	867	.....	.....	.....	Gas, 1,306 feet.....
					Buchanan-2.....	1,300	12	798	702	.....	.....	.....	Gas, 1,391 feet.....
33					"Gas".....	1,381	3	879	621	1,380	.....	.....	Gas, 1,506 feet.....
					Kirkwood-1.....	1,391	17	889	611	.....	.....	.....	Gas, 1,506 feet.....
					Kirkwood-2.....	1,506	8	1,004	496	.....	.....	.....	Gas, 1,616 feet.....
					Tracey.....	1,616	.....	1,114	386	.....	.....	Light	.....
					McClosky.....	922	6	417	1,083	925	.....	.....	.....
					Bridgeport.....	1,085	25	530	970	1,042	.....	.....	Salt water, 1,075 feet.....
	33	Curtis, Akin & Co.....	Fitch, No. 14.....	505	..do.....	1,075	15	570	930	.....	.....	.....	Gas, 1,514 feet.....
					Buchanan.....	1,394	2	889	611	.....	1,617	.....	.....
					Kirkwood.....	1,514	6	1,009	491	.....	.....	Best	.....
	34	Curtis, Akin & Co.....	Fitch, No. 2.....	496	Bridgeport.....	795	.....	299	1,201	.....	.....	.....	.....
					..do.....	848	.....	352	1,148	.....	945	.....	.....
					..do.....	910	.....	414	1,086	.....	.....	.....	.....
					..do.....	925	19	429	1,071	930	.....	.....	.....
	35	Curtis, Akin & Co.....	Fitch, No. 15.....	496	..do.....	1,005	20	509	991	1,015	.....	.....	Salt water, 1,047 feet.....
					Buchanan.....	1,045	.....	549	951	.....	.....	.....	.....
					Kirkwood.....	1,370	12	874	626	1,373	1,433	.....	.....

36	Curtis, Akin & Co	Fitch, No. 1	469	Bridgeport	776	.....	307	1, 193	.....	.....	.....	.....	.....
	do			do	806	.....	337	1, 163	.....	.....	.....	.....	.....
	do			do	874	.....	405	1, 005	.....	944	.....	.....	.....
	do			do	775	25	300	1, 200	.....	.....	.....	.....	.....
	do			do	820	35	345	1, 155	.....	.....	.....	.....	.....
	do			do	945	35	470	1, 030	.....	.....	.....	.....	Red rock, 1,170 and 1, 29 feet
37	Curtis, Akin & Co	Fitch, No. 20	475	Buchanan	1, 060	65	585	915	.....	.....	.....	.....	.....
	do			"Gas"	1, 240	8	765	735	.....	.....	.....	.....	.....
	do			Kirkwood	1, 315	46	840	660	1, 325	1, 361	.....	.....	.....
	do			Bridgeport	775	15	300	1, 200	.....	.....	.....	.....	.....
	do			do	810	35	335	1, 165	.....	.....	.....	.....	.....
	do			do	920	20	445	1, 055	.....	.....	.....	.....	.....
	do			do	980	18	505	995	980	.....	Show	.....	.....
38	Curtis, Akin & Co	Fitch, No. 18	475	Buchanan	1, 065	60	590	910	.....	.....	.....	.....	Salt water, 1,075 feet
	do			"Gas"	1, 240	10	765	735	.....	.....	.....	.....	.....
	do			Kirkwood	1, 313	22	838	662	1, 315	.....	.....	.....	.....
	do			Tracey	1, 405	4	930	570	.....	1, 455	.....	.....	Gas, 1,455 feet in lime
39	Curtis, Akin & Co	Fitch, No. 6	475	Bridgeport	777	142	302	1, 198	784	1, 015	.....	.....	.....
	do			do	847	.....	383	1, 117	847	.....	.....	.....	.....
	do			do	862	18	398	1, 102	862	.....	.....	.....	.....
	do			do	945	228	481	1, 019	945	.....	.....	.....	.....
	do			Kirkwood-1	1, 298	40	834	686	1, 288	.....	.....	.....	Salt water, 1,050 feet
	do			Kirkwood-2	1, 392	4	928	572	.....	1, 418	.....	.....	.....
41	Curtis, Akin & Co	Fitch, No. 4	464	Bridgeport	771	.....	307	1, 193	.....	.....	.....	.....	.....
	do			do	881	.....	417	1, 083	.....	.....	.....	.....	.....
	do			do	970	26	506	994	.....	.....	.....	.....	.....
	do			do	863	18	390	1, 120	880	.....	.....	.....	.....
	do			do	915	40	433	1, 067	915	.....	.....	.....	.....
	do			do	985	47	503	997	1, 015	.....	.....	.....	.....
42	Curtis, Akin & Co	Fitch, No. 21	482	Buchanan-1	1, 065	50	583	917	.....	.....	.....	.....	.....
	do			Stray	1, 188	2	706	794	.....	.....	.....	.....	.....
	do			Buchanan-2	1, 201	17	719	781	.....	.....	.....	.....	.....
	do			Kirkwood	1, 333	37	851	649	.....	1, 411	.....	.....	.....
	do			Bridgeport	870	.....	386	1, 114	.....	.....	.....	.....	.....
43	Curtis, Akin & Co	Fitch, No. 11	484	do	920	15	436	1, 064	923	.....	.....	.....	Broken sand, 935 to 980 feet
	do			do	981	23	497	1, 008	981	1, 004	.....	.....	.....
	do			do	930	15	456	1, 044	935	.....	.....	.....	.....
	do			do	992	22	518	982	998	.....	.....	.....	.....
	do			Kirkwood	1, 335	31	816	639	1, 357	1, 369	.....	.....	Red rock, 1,330 feet
	do			Bridgeport	940	57	447	1, 053	942	.....	.....	.....	Sand broken, 953 to 997 feet
44	Curtis, Akin & Co	Fitch, No. 12	474	do	1, 004	14	511	989	1, 004	1, 021	.....	.....	Salt water, 1,021 feet
	do			do	930	12	437	1, 083	937	.....	.....	.....	.....
	do			do	996	25	503	997	1, 005	1, 021	.....	.....	.....
45	Curtis, Akin & Co	Fitch, No. 8	493	do	1, 004	14	511	989	1, 004	1, 021	.....	.....	.....
	do			do	930	12	437	1, 083	937	.....	.....	.....	.....
	do			do	996	25	503	997	1, 005	1, 021	.....	.....	.....
46	Curtis, Akin & Co	Fitch, No. 10	493	do	1, 004	14	511	989	1, 004	1, 021	.....	.....	.....
	do			do	930	12	437	1, 083	937	.....	.....	.....	.....
	do			do	996	25	503	997	1, 005	1, 021	.....	.....	.....

## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
30— S; E...	30	Bridgeport.....	Willey, No. 3.....	514	Bridgeport.....	900	35	386	1,114	.....	.....	.....
					do.....	955	13	441	1,059	.....	.....	.....
					do.....	980	.....	476	1,024	.....	.....	.....
	31	Curtis, Akin & Co.....	Fitch, No. 5.....	504	do.....	1,003	.....	499	1,001	.....	Gas	Red rock, 1,380 feet.....
					"Gas".....	1,320	25	816	684	.....	.....	.....
					Kirkwood.....	1,387	5	883	617	.....	.....	.....
					Bridgeport.....	1,775	10	773	1,237	.....	.....	.....
					do.....	845	9	343	1,157	.....	.....	.....
					do.....	864	35	362	1,138	.....	.....	.....
					do.....	915	10	413	1,087	.....	.....	.....
					do.....	980	12	458	1,042	.....	Gas, 968 feet.....	.....
					do.....	1,025	19	523	977	.....	.....	.....
					do.....	1,065	30	563	937	.....	.....	.....
	32	Curtis, Akin & Co.....	Fitch, No. 9.....	502	Buchanan-1.....	1,135	17	633	867	.....	.....	.....
					Buchanan-2.....	1,300	12	798	702	.....	.....	Gas, 1,306 feet.....
					"Gas".....	1,381	3	879	621	.....	.....	.....
					Kirkwood-1.....	1,391	17	889	611	.....	.....	Gas, 1,391 feet.....
					Kirkwood-2.....	1,506	8	889	496	.....	.....	Gas, 1,506 feet.....
					Tracey.....	1,616	.....	1,004	386	.....	.....	Gas, 1,616 feet.....
					McClosky.....	1,922	6	1,114	1,083	.....	Light	.....
					Bridgeport.....	1,035	25	417	970	.....	.....	.....
	33	Curtis, Akin & Co.....	Fitch, No. 14.....	505	do.....	1,075	15	530	930	.....	.....	Salt water, 1,075 feet.....
					Buchanan.....	1,394	2	570	611	.....	.....	.....
					Kirkwood.....	1,514	6	889	491	.....	.....	Gas, 1,514 feet.....
	34	Curtis, Akin & Co.....	Fitch, No. 2.....	496	Tracey.....	796	.....	1,009	491	.....	.....	.....
					Bridgeport.....	848	.....	299	1,201	.....	Best	.....
					do.....	910	.....	352	1,148	.....	.....	.....
					do.....	925	19	414	1,086	.....	.....	.....
					do.....	1,005	20	429	1,071	.....	.....	.....
	35	Curtis, Akin & Co.....	Fitch, No. 15.....	496	do.....	1,045	.....	509	991	.....	.....	.....
					Buchanan.....	1,370	.....	549	961	.....	.....	Salt water, 1,047 feet.....
					Kirkwood.....	1,370	12	874	620	.....	.....	.....

54	Kewanee	Stallings, No. 9	493	Bridgeport	907	13	414	1,066	912	997	Show	
				do	945	51	452	1,048				
				do	945		447	1,053				
55	Kewanee	Stallings, No. 14	498	"Gas"	1,260	3	762	1,738			250	
				Kirkwood	1,312	60	814	686				
56	Kewanee	Stallings, No. 8	498	Tracey	1,395	59	897	603		1,454		
				Bridgeport	933	17	435	1,065				
				do	980	22	482	1,018	980	1,004		
57	Kewanee	Stallings, No. 5	472	do	869	41	397	1,103	905			
				do	930		458	1,042				
				do	965		493	1,007	985	997		
58	Kewanee	Stallings, No. 3	488	do	913		425	1,075				
				do	975	10	487	1,013				
				Kirkwood	1,322	40	818	682				
59	Kewanee	Stallings, No. 12	504	Tracey	1,435	5	931	569			Gas	Gas, 1,562 feet, 6,000,000 cu. ft. gas daily
				McClosky	1,562	4	1,658	442		1,566		
60	Kewanee	Stallings, No. 7	504	Bridgeport	940	20	436	1,064		1,016		
				do	913		421	1,079				
				do	930		438	1,062				
61	Kewanee	Stallings, No. 6	492	do	960		468	1,032				
				do	985		483	1,007		1,266		
				do	903		416	1,084				
62	Kewanee	Stallings, No. 11	487	"Gas"	1,262	10	775	725			Gas, 1,262 feet	
				Kirkwood	1,320	16	833	667		1,355		
				Bridgeport	782		305	1,195				
				do	925	77	448	1,052				
63	Kewanee	Stallings, No. 2	477	"Gas"	1,248		771	729			Gas	
				Kirkwood-1	1,313		836	664			Oil	
				Kirkwood-2	1,360	8	873	627			Gas	
				Tracey	1,365	34	888	612			Oil	
				Bridgeport	798	6	316	1,184				
64	Kewanee	Stallings, No. 10	482	do	884	10	402	1,098				
				do	930	30	448	1,052		984		
65	Ohio	Sutton, No. 5	493	do	781	30	288	1,212	790		35	
				do	845	5	352	1,148				
				Buchanan	1,000	15	512	988				
66	Ohio	Sutton, No. 9	488	Kirkwood	1,334	60	846	654		1,394	Well abandoned	
				Bridgeport	820	210	331	1,169				
67	Ohio	Sutton, No. 11	489	Kirkwood	1,335	54	846	654	1,335	1,395	100	
				Bridgeport	806	44	302	1,198				
68	Ohio	Sutton, No. 4	504	do	960	49	456	1,044	1,000		35	
				do	790	250	290	1,210				
69	Ohio	Sutton, No. 10	500	Kirkwood	1,331	59	831	669	1,340			
				Tracey	1,495	10	995	505				Gas, 1,495 feet
				McClosky	1,565	5	1,065	435		1,570	Gas	Gas, 1,565 feet, 2,000,000 cu. ft. daily
70	Ohio	Sutton, No. 7	505	Kirkwood	1,321	24	816	684	1,329	1,345	68	
71	Ohio	Sutton, No. 1	504	Bridgeport	783	37	279	1,221				
				do	893	41	389	1,111				
72	Ohio	Sutton, No. 12	485	Kirkwood	1,343	33	858	642	1,343	1,396	75	

## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation—feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
30—S. E . . .	47	Curtis, Akin & Co . . . . .	Fitch, No. 7 . . . . .	494	Bridgeport . . . . .	858	52	364	1,136	894	.....	.....	.....
					do . . . . .	951	.....	457	1,043	951	.....	.....	.....
	48	Curtis, Akin & Co . . . . .	Fitch, No. 16 . . . . .	498	Bridgeport and Buchanan . . . . .	1,015	171	521	979	1,020	.....	.....	Salt water, 1,030 feet.
					"Gas" . . . . .	1,300	20	806	694	.....	.....	.....	Gas, 1,305 feet.
	49	Curtis, Akin & Co . . . . .	Fitch, No. 3 . . . . .	475	Kirkwood-1 . . . . .	1,365	40	871	629	1,370	.....	.....	Red rock, 1,295 feet.
					Kirkwood-2 . . . . .	1,416	6	922	578	.....	.....	.....	.....
	50	Curtis, Akin & Co . . . . .	Fitch, No. 17 . . . . .	475	Tracey-1 . . . . .	1,506	14	1,012	488	.....	.....	.....	Gas, 1,565 feet.
					Tracey-2 . . . . .	1,565	8	1,071	429	.....	.....	.....	Gas, 1,600 feet.
	51	Kewanee . . . . .	Stallings, No. 1 . . . . .	474	McClosky . . . . .	1,600	.....	1,106	394	.....	1,606	.....	.....
					Bridgeport . . . . .	889	.....	391	1,109	.....	.....	.....	.....
	52	Kewanee . . . . .	Stallings, No. 13 . . . . .	475	do . . . . .	1,015	12	517	983	1,015	1,027	.....	.....
					do . . . . .	776	.....	301	1,199	.....	.....	.....	.....
	53	Kewanee . . . . .	Stallings, No. 4 . . . . .	493	do . . . . .	806	.....	331	1,169	.....	.....	.....	.....
					do . . . . .	874	.....	399	1,101	.....	947	.....	.....
					do . . . . .	773	79	298	1,202	773	.....	.....	.....
					do . . . . .	905	40	430	1,070	.....	.....	.....	.....
					do . . . . .	990	5	515	985	990	.....	.....	.....
					Buchanan . . . . .	1,060	45	585	915	.....	.....	.....	.....
					"Gas" . . . . .	1,228	.....	753	747	.....	.....	.....	.....
					Kirkwood-1 . . . . .	1,300	40	825	675	1,300	.....	.....	.....
					Kirkwood-2 . . . . .	1,368	20	893	607	.....	.....	.....	.....
					Tracey . . . . .	1,400	24	925	675	1,411	1,424	.....	.....
					Bridgeport . . . . .	802	.....	328	1,172	.....	.....	.....	.....
					do . . . . .	912	81	438	1,062	.....	.....	.....	.....
					Kirkwood . . . . .	1,304	21	829	671	.....	.....	.....	.....
					Tracey . . . . .	1,401	21	926	574	.....	1,433	.....	.....
					Bridgeport . . . . .	834	.....	341	1,159	.....	.....	.....	.....
					do . . . . .	864	.....	371	1,129	.....	.....	.....	.....
					do . . . . .	937	5	444	1,056	.....	.....	.....	.....
					Kirkwood . . . . .	1,200	54	803	697	.....	.....	.....	.....

54	Kewanee	Stallings, No. 9.	493	Bridgeport.	907	13	414	1,086	912	997	Show
				do.	945	51	452	1,048			
				do.	945		447	1,063			
55	Kewanee	Stallings, No. 14.	498	"Gas"	1,280	3	762	738			
				Kirkwood	1,312	60	814	683			250
				Tracey	1,395	59	897	693	1,454		
56	Kewanee	Stallings, No. 8.	498	Bridgeport.	933	17	435	1,065			
				do.	980	22	482	1,018	980		
				do.	869	41	397	1,103	905		
57	Kewanee	Stallings, No. 5.	472	do.	930		458	1,042			
				do.	965		493	1,007	985		
				do.	913		425	1,075			
58	Kewanee	Stallings, No. 3.	488	do.	975	10	487	1,013			
				Kirkwood	1,322	40	818	682			
59	Kewanee	Stallings, No. 12.	504	Tracey	1,435	5	931	569			
				McClosky	1,562	4	1,658	442	1,566		Gas cu. ft. gas daily.
60	Kewanee	Stallings, No. 7.	504	Bridgeport.	940	20	436	1,064		1,016	
				do.	913		421	1,079			
				do.	930		438	1,062			
61	Kewanee	Stallings, No. 6.	492	do.	960		468	1,032			
				do.	985		493	1,007	1,266		
				do.	903		416	1,084			
62	Kewanee	Stallings, No. 11.	487	"Gas"	1,262	10	775	725			Gas, 1,262 feet.
				Kirkwood	1,320	16	833	667	1,355		
				Bridgeport.	782		305	1,195			
				do.	925	77	448	1,052			
63	Kewanee	Stallings, No. 2.	477	"Gas"	1,248		771	729			Gas.
				Kirkwood-1.	1,313		836	684			Oil.
				Kirkwood-2.	1,350	8	873	627			Gas.
				Tracey	1,365	34	888	612			Oil.
64	Kewanee	Stallings, No. 10.	482	Bridgeport.	798	6	316	1,184			
				do.	884	10	402	1,098			
				do.	930	30	448	1,052	984		
				do.	781	30	288	1,212	790		35
65	Ohio	Sutton, No. 5.	493	do.	845	5	352	1,148			
				Buchanan	1,000	15	512	988			
66	Ohio	Sutton, No. 9.	488	Kirkwood	1,334	60	846	654		1,394	Well abandoned.
67	Ohio	Sutton, No. 11.	489	Bridgeport.	820	210	331	1,169			
				Kirkwood	1,335	54	846	604	1,335	1,395	100
68	Ohio	Sutton, No. 4.	504	Bridgeport.	906	44	302	1,198			
				do.	960	49	456	1,044	1,000		35
				do.	790	250	290	1,210			
69	Ohio	Sutton, No. 10.	500	Kirkwood	1,331	59	831	669	1,340		
				Tracey	1,495	10	996	505			Gas, 1,495 feet.
				McClosky	1,565	5	1,065	435		1,570	Gas, 1,565 feet, 2,000,000 cu. ft. daily.
70	Ohio	Sutton, No. 7.	505	Kirkwood	1,321	24	816	684	1,329	1,345	68
71	Ohio	Sutton, No. 1.	504	Bridgeport.	783	37	279	1,221			
				do.	893	41	389	1,111			
72	Ohio	Sutton, No. 12.	485	Kirkwood	1,343	33	858	642	1,343	1,386	75

## Lawrence County—Petty Township—Continued.

Section No.	Map No.	Name of oil company.	Name of well.	Surface elevation—feet.	Sand.				Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.			
30— S. E.	73	Ohio	Sutton, No. 3.	508 {	Bridgeport.	816	24	308	1,192	960	35	.....
	74	Ohio	Sutton, No. 8.	542 {	do.	947	24	439	1,061	1,392	60	Gas, 1,316 feet.
	75	Ohio	Sutton, No. 2.	542 {	Kirkwood.	1,392	10	860	1,660	1,403	60	.....
	76	Ohio	Sutton, No. 6.	537 {	Bridgeport.	947	25	306	1,196	868	.....	.....
30 (N.)— N. W.					do.	945	20	403	1,067	835	.....	.....
					do.	820	20	283	1,217	835	50	.....
					do.	935	113	398	1,102	1,045	.....	.....
	1	Ohio	Wright, No. 1.	435	McClosky.	1,647	33	1,212	288	1,650	25	T. 5 N., R. 12 W.
31 (N.)— N. W.					do.	1,692	.....	1,260	240	.....	Dry	.....
					do.	1,663	12	1,228	272	1,750	Dry	T. 5 N., R. 12 W.
					Kirkwood.	1,482	14	1,047	453	1,482	.....	.....
	2	Ohio	Waggoner, No. 3.	435 {	McClosky.	1,647	18	1,212	228	1,647	23	Gas, 1,647 feet.
34— S. E.					McClosky.	1,670	3	1,235	265	2,001	Dry	.....
					McClosky.	1,670	3	1,235	265	2,001	Dry	.....
					McClosky.	1,670	3	1,235	265	2,001	Dry	.....
	1	Ohio	A. Waggoner, No. 1.	437	.....	.....	.....	.....	.....	1,694	Dry	T. 5 N. R. 13 W.
35— N. E.					.....	.....	.....	.....	.....	.....	.....	No record.
					.....	.....	.....	.....	.....	.....	.....	Gas.
					.....	.....	.....	.....	.....	.....	50	.....
	1	Haywood.	D. Updike, No. 7.	436 {	Kirkwood.	1,490	25	1,054	446	.....	.....	.....
					Tracey.	1,540	20	1,104	396	1,580	.....	.....
					Kirkwood.	1,460	14	1,024	476	.....	.....	.....
					Tracey.	1,498	30	1,062	438	.....	.....	Gas.
	3	Haywood.	D. Updike, No. 6.	436 {	McClosky.	1,617	31	1,181	319	1,630	50	Drilling.
					Tracey.	1,542	18	1,107	393	1,660	75	.....
					do.	1,545	16	1,110	390	1,563	37	Gas, 1,645 feet.
					do.	1,543	14	1,106	392	1,563	40	Gas, 1,643 feet.
	8	Ohio.	Parrot, No. 1.	435 {	do.	1,510	30	1,076	425	1,520	12	Gas, 1,610 feet.
					McClosky.	1,626	10	1,191	309	1,658	30	Gas, 1,647 feet.
	9	Ohio.	Racop, No. 2.	436 {	do.	1,645	30	1,209	291	1,700	.....	.....

S. W.	10 Ohio	M. Smith, No. 2.	437	Tracey	1, 530	10	1, 093	407	1, 530	1, 672	50	
	11 Ohio	W. Updike, No. 1.	436	McClosky	1, 601	17	1, 164	336				Gas, 1, 518 feet.
	12 Ohio	M. Smith, No. 1.	437	Tracey	1, 518	17	1, 082	418			15	
	13 Ohio	Walters, No. 3.	436	McClosky	1, 602	16	1, 166	334	1, 602	1, 660		
	14 Ohio	Walters, No. 7.	444	"Gas"	1, 420	10	1, 083	517				Gas, 1, 530 feet.
	15 Ohio	Walters, No. 5.	438	Kirkwood	1, 470	40	1, 033	467		1, 640	Gas	
	1 Ohio	Walters, No. 6.	444	McClosky	1, 600	11	1, 164	336	1, 600	1, 645	5	
	2 Ohio	Walters, No. 4.	435	Kirkwood	1, 439	8	995	505				
	3 Ohio	Allen Hrs., No. 1.	436	McClosky	1, 605	20	1, 161	339	1, 605	1, 631	35	Gas, 1, 605 feet.
	4 Ohio	Allen Hrs., No. 4.	437	do	1, 620	15	1, 182	318	1, 620	1, 641	65	Gas, 1, 628 feet.
	5 Ohio	Allen Hrs., No. 3.	436	Kirkwood	1, 430	20	986	514				Gas, 1, 440 feet.
	6 Ohio	Allen Hrs., No. 2.	436	McClosky	1, 603	22	1, 159	341	1, 615	1, 627	50	
S. E.	7 Snowden Bros.	Petty, No. 2.	436	Kirkwood	1, 406	16	971	529	1, 406	1, 427	60	
	8 Snowden Bros.	Petty, No. 1.	436	do	1, 378	22	942	558	1, 378	1, 420	50	Drilling.
	9 Snowden Bros.	Petty, No. 4.	435	Kirkwood	1, 431	14	995	505	1, 431	1, 447	42	Gas, 1, 431 feet.
	10 Snowden Bros.	Petty, No. 3.	435	do	1, 392	8	956	544		1, 406	Dry	
	11 Ohio	G. Gray, No. 5.	435	Bridgeport	950	40	514	986				Hole full of salt water, 990 feet.
	12 Ohio	G. Gray, No. 1.	435	Buchanan	1, 155	15	719	781				
	13 Ohio	G. Gray, No. 4.	434	Stray	1, 275	5	839	661				Salt water, 1, 280 feet.
	1 Ohio	Longnecker, No. 2.	435	"Gas"	1, 330	10	894	606	1, 335			Red shale, 1, 280 and 1, 408 feet.
				Kirkwood-1	1, 378	22	942	558	1, 385			
				Kirkwood-2	1, 413	5	977	523	1, 413			
				Bridgeport	870	15	434	1, 066				Salt water, 800 feet.
				do	920	60	484	1, 016				Hole full of water, 980 feet.
				do	1, 095	8	659	851				
				Buchanan-1	1, 113	62	677	823				
				Buchanan-2	1, 185	35	749	751				



Lawrence County—Petty Township—Concluded.

Section No.	Map No.	Name of oil company.	Name of well.	Sur-face elevation feet.	Sand.					Oil depth—feet.	Total depth—feet.	Initial product—barrels.	Remarks.
					Name.	Depth to top—feet.	Thickness penetrated—feet.	Altitude below sea level—feet.	Altitude above datum plane—feet.				
36— S. E....	2	Ohio.....	Longnecker, No. 3.....	435 {	Kirkwood.....	1,450	5	1,015	485	1,611	1,647	Gas 85	Gas, 1,450 feet.....
	3	Ohio.....	Longnecker, No. 1.....	436 {	McClosky.....	1,611	7	1,176	324	1,611	1,647	Dry	Gas, 1,602 feet.....
	4	Ohio.....	E. Smith, No. 1.....	435 {	do.....	1,602	43	1,166	334	1,611	1,647	75	Gas, 1,498 feet.....
	5	Ohio.....	E. Gray, No. 1.....	435 {	Kirkwood.....	1,498	22	1,063	437	1,621	1,657	90	Gas, 1,498 feet.....
	6	Ohio.....	E. Gray, No. 3.....	436 {	McClosky.....	1,616	20	1,181	319	1,616	1,645	40	Gas, 1,498 feet.....
	7	Ohio.....	E. Gray, No. 2.....	438 {	do.....	1,485	19	1,060	440	1,616	1,645	35	Gas, 1,498 feet.....
					McClosky.....	1,609	12	1,173	327	1,616	1,635		Gas, 1,498 feet.....
					Kirkwood.....	1,445	15	1,007	493	1,610	1,621		Gas, 1,498 feet.....
					McClosky.....	1,606	10	1,168	332	1,610	1,621		Gas, 1,498 feet.....

# INDEX

	PAGE
Abandonment of wells in Illinois.....	181
Accumulation of oil.....	16, 18
Under impervious cover.....	22
On LaSalle anticline.....	143
In Robinson pool.....	104
Ackman, pumping station at.....	164
Acknowledgments.....	12
Albion, prospecting near.....	16
Altitude of sands, method of determining....	95
American bottoms, prospecting on.....	16
Annapolis, gas sold to.....	181
Anticline, definition of.....	22
Effect of.....	83
In Buchanan sand.....	108
In "Gas sand".....	109
In Kirkwood sand.....	110
Anticlinal theory, confirmation of.....	11
Arches in Robinson pool.....	99
Areal extent of oil.....	12, 25, 27
Of oil land in states.....	145
Production of oil.....	163
Armitage No. 2 well, record of.....	123
Associated Producers Co., pipe lines of.....	166
Aviston, prospecting near.....	16
Axis of Illinois basin.....	142

## B

Bailer, description of.....	154
Bailey pumping station.....	164
Bain, H. Foster, general sections by .....	26
Bakers Lane, loading racks.....	158
Band wheels, use of.....	152
Bartelso, prospecting near.....	16
Barren wells in Illinois.....	145
Base map, use of.....	96
Bellair, gas areas near.....	181
Benoist farm, prospecting on.....	15
Sand, correlation of.....	109, 182
Big Four Oil Co., development by.....	106
Birds, gas sold to .....	181
Loading racks at.....	158
Boiler house, use of.....	158
Bolton, E. C., work of.....	164
Bond County sand, correlation of.....	109
Bonus for oil leases.....	147
Bowers, J. D., No. 7 well, record of.....	129
Boyd No. 11 well, section of.....	119
Bramsky, Oscar E., investigations of.....	20
Bridgeport gas areas.....	181
Loading racks.....	158
Pumping station.....	164
Tank farm.....	165
Bridgeport Oil Co., development of Bridge- port sand by.....	106
Bridgeport sand.....	15
Correlated with Pottsville.....	83
Cost of drilling to.....	153
Depth of.....	106
Development of.....	106
Distribution of.....	106, 137
Drilling of.....	154
Initial production in.....	137
Production, rank of.....	135

	PAGE
Production of, in Bridgeport Township.....	137
In Dennison Township.....	137
In Lawrence County.....	106
In Petty Township.....	137
Salt water of, in Dennison Township.....	141
In Lawrence Township.....	140
Stratigraphy of.....	106
Thickness of.....	106
Type area of.....	137
Bridgeport Township, wells in Kirkwood sand	137
Gas in.....	108, 139
Gushers in Buchanan sand.....	137
Production.....	135, 137
Salt water.....	140
Structural relations of.....	137
Type area of Bridgeport and Buchanan sands.....	137
Wells in.....	135
Brown & Hogue, purchased by Ohio Oil Co..	163
Buchanan, R. O., farm.....	107
Buchanan sand.....	15
Anticlinal dome of.....	108
Cost of drilling to.....	153
Discovery of.....	107
Gas in Bridgeport Township.....	139
In Lawrence County.....	107
In Petty Township.....	136
Production of, in Bridgeport Township....	137
In Dennison Township.....	138
Salt water.....	107
In Bridgeport Township.....	140
In Lawrence Township.....	140
Structure of.....	107
Type area of.....	107, 137
Bull wheel, use of.....	152
Bureau County, gas in.....	182
Burton Bros. development of Kirkwood sand by.....	109
Busch and Everett, development of Tracey sand by.....	111

## C

Cady, Gilbert, work of.....	28
California oil land.....	145
Campbell Hill, prospecting near.....	16
Capillary action.....	19, 20
Carbondale formation in Crawford County ...	53
Stratigraphy of.....	28
Carlinsville, gas near.....	183
Prospecting near.....	15
Carlinsville limestone, correlation of.....	53
Carlyle oil field, description of.....	16
Oil prices in.....	169
Carlyle sand correlation of.....	109
Carter, L. D., prospecting by.....	14
Carmi, prospecting near.....	16
Casey, gas sold to.....	181
Loading rack at.....	158
Pumping station at.....	164
Casey pool, development from.....	146
Casey, sand, position of.....	29
Casing, use of.....	155
Weight of per foot.....	16
Central Refining Co., Perry King No. 5 well..	120
Refinery at Lawrenceville.....	168
Tank car shipments of.....	166

## Index—Continued.

	PAGE
Cerro Gordo, axis near.....	142
Champaign, gas near.....	183
Champaign County, prospecting in.....	15
Chester formations, description of.....	30, 31
Distribution of.....	31
In Lawrence County.....	83
Kirkwood sand in.....	84, 109
Limestone strata of.....	83
Red shale in.....	84
Salt water in Lawrence County.....	140
Top of.....	29, 82
Childress No. 3 well, record of.....	78
Christian County, gas in.....	182
Circulation of oil.....	18, 20
Clark County, acreage drawn on by oil wells.....	151
Cost of wells in.....	153
Gas sand in.....	182
LaSalle anticline in.....	142
Production, daily.....	163
Prospecting in.....	12
Storage tanks in.....	165
Clapp, Frederick G., classification of structure by.....	23
Coal fields, selection of well sites in.....	151
Cobden, prospecting near.....	16
Cochran, C. T., No. 9 well, record of.....	51
Colchester, gas near.....	183
Columnar section.....	84
Of Crawford County.....	33
Of Lawrence County.....	54
Contour lines, use of.....	11, 12, 96
Of Robinson sand.....	99
Of Honey Creek pool.....	99
Contract for drilling.....	151
Cornplanter Refining Co., shipments of.....	166, 169
Correlation of Benoist and Kirkwood sand.....	182
Of Bridgeport and Pottsville sands.....	83
Of Carlinville limestone.....	53
Of "Gas sand".....	108
Of Kirkwood sand.....	109, 182
Of Robinson sand.....	98
Of Bridgeport sands.....	82
Cost of drilling wells.....	152, 153, 160
Of operating a lease.....	161
Coulterville, prospecting near.....	16
Crawford County—	
Acreage drawn on by oil wells.....	151
Carbondale formations in.....	53
Columnar section in.....	33
Cost of wells in.....	153
Development in.....	14, 146
Drift in.....	52
Extent of pools.....	97
Gas sand and gas pressure.....	182
Geology of.....	97, 142
McLeansboro formations in.....	32, 53
Pennsylvanian rocks in.....	53
Pleistocene in.....	52
Pottsville formation.....	54
Production, daily.....	163
Prospecting in.....	13
Shallow sand in.....	99
Stratigraphy of.....	32, 52
Structure of.....	99
Storage tanks in.....	165
Crawford County Oil, Gas & Coal Co., work of.....	13
Cross-section A-A.....	114
B-B.....	123
C-C.....	125
D-D.....	130
Cross-section of Lawrence County.....	114
Cross-sections, use of.....	11, 96
Method of construction.....	114
Cumberland, pumping station at.....	164
Cumberland County, production in.....	163
Gas found and gas pressure.....	182
Cummings No. 12 well, record of.....	70
Curtis, C. F., No. 8, well, record of.....	44
Curtis & Aiken, record of Fitch No. 17 well.....	119
Cypress sandstone, unfavorable.....	31

	PAGE
Duncanville pool, development of.....	14
Day, Dr. David T., investigations of.....	20
Oil statistics compiled by.....	167
Decline in shallow fields.....	163
In Illinois fields.....	181
Decatur, prospecting near.....	16
Dennison Township, best wells in McClosky sand.....	137
Drift in.....	82
Gas in.....	139, 140
Kirkwood sand, most productive.....	137
Production in.....	135
Production of Bridgeport sand.....	137
Of Buchanan sand.....	138
Of Kirkwood sand.....	138
Of Tracey sand.....	138
Salt water in.....	141
Structural relations in.....	137
Type area of Buchanan sand.....	107
Wells in.....	135
Denny, prospecting near.....	16
Derricks.....	152, 153
Derry Township, prospecting in.....	13
Deuchler, W. E., work of.....	12, 94
Development of oil properties.....	146
DeWitt County, depth of gas and gas pressure.....	182
DeWolf, F. W., work of.....	28
Diatoms as the origin of oil.....	17
Diffusion of oil through rocks.....	17
Through Fuller's earth.....	21
Dip of Buchanan sand.....	107
Of Kirkwood sand.....	111
Of McClosky sand on LaSalle anticline.....	114
In Petty Township.....	113
Of Robinson sand.....	100
Dome Structure.....	83
Of Buchanan sand.....	108
Of "Gas" sand.....	109
Of Kirkwood sand.....	110
Drake, J. M., No. 23 well, record of.....	47
Drift gas.....	28, 183
Drilling, method of.....	154
Cost of.....	153
Drive pipe.....	155, 160
Drole No. 7 well, record of.....	117
Dry spots in Robinson pool.....	100
Dry holes in Illinois, table of.....	180
Duncanville pool, general level of.....	100
Price of oil.....	167
DuQuoin, prospecting near.....	16

	PAGE
East St. Louis, refineries at.....	166
Economic features of Illinois field.....	145
Edgar County, daily production in.....	163
Depth of gas and gas pressure.....	182
Edwards County, in Illinois basin.....	142
Edwards, O. F., No. 15 well.....	35
Efficiency of gravity system.....	165
Of Illinois operators.....	145
Eldorado, prospecting near.....	16
Ellis, J. R., work of.....	91, 93
Eshelman No 7 well, record of.....	129
No. 16 well, record of.....	129

	PAGE
Finley, D. T., early work of.....	14
Fitch No. 17 well, record of.....	119
Flat Rock, gas sold to.....	181
Flat Rock pool, correlation of.....	14
General level of.....	100
Fuller's earth, diffusion through.....	21
Fusulina fossil as a marker.....	28, 33, 44, 53
Fyffe, E., No. 29 well, record of.....	126

## Index—Continued.

		PAGE	
<b>G</b>			
Gas, areas of.....	118, 182	Hardinville quadrangle, description of ...	86, 87, 91
Depths of.....	182	Heyworth, drift gas near.....	183
Gravitation of.....	22	Henry No. 1 well, record of.....	133
In, at or near:		Herrick, prospecting near.....	16
Bridgeport sand.....	140	Herrin coal and Carbondale formation .....	28
Bridgeport Township.....	139	Hoblitzell, J. J., work of.....	14
Buchanan sand.....	139	Honey Creek pool, opening of.....	14
Carlville.....	183	Structure of.....	99
Dennison Township.....	140	Hutsonville, gas sold to.....	181
Drift formations.....	26		
"Gas sand".....	139	<b>I</b>	
Jacksonville.....	183	Illinois, natural gas in.....	181
Kirkwood sand.....	139	Wells drilled in.....	145, 181
Lawrence Township.....	140	Rank as a gas state.....	181
LaSalle anticline.....	143	As an oil state.....	145
McClosky sand.....	139	Stratigraphy of.....	25
Morgan County.....	183	Structure of.....	32
Petty Township.....	138, 139	Illinois basin, axis of.....	142
Robinson pool.....	99, 103	Illinois oil fields, efficiency of.....	145, 146
Tracey sand.....	139	Extent of.....	145
Pressure of.....	20, 182	Saturation theories for.....	24
Production of in Illinois.....	181	Impromptu Exploration Co., prospecting of..	15
Gas, sold to:		Independent oil companies.....	166
Annapolis.....	181	Indian Refining Co., operations of.....	163
Birds.....	181	Initial productions in Illinois .....	101, 135, 180
Bridgeport.....	181	Of Kirkwood sand.....	109
Casey.....	181	Of Robinson sand.....	101
Flat Rock.....	181	International Oil and Gas Co., development	
Hutsonville.....	181	by.....	112
Marshall.....	181	Interval between:	
Martinsville.....	181	Buchanan sand and "Gas sand".....	108
New Hebron.....	181	Chester and "Gas sand".....	83
Oblong.....	181	Kirkwood sand and "Gas sand".....	110
Olney.....	181	Kirkwood and Tracey sands.....	111
Palestine.....	181	Tracey sand and Chester.....	84
Pinkstaff.....	181	Tracey and McClosky sands.....	113
Porterville.....	181	Investments in oil properties.....	162, 163
Robinson.....	181	Iola, prospecting near.....	16
Stoy.....	181	Irick, William, wells of.....	13
Sumner.....	181	Iuka, prospecting near.....	16
Vincennes.....	181		
Westfield.....	181	<b>J</b>	
Structural relations of.....	138	Jacksonville, oil and gas wells near.....	183
Use of.....	147, 181	Jamestown, Ind., pumping station at.....	165
"Gas sand," absent along D-D cross-section..	130	Jennings Oil Co., purchase of.....	163
Anticlinal dome of.....	109	Jerseyville, prospecting near.....	16
Correlation of.....	108	Johnson, H. H., work of.....	12
In, at or near:		Jones, J. C., work of.....	12
Bridgeport Township.....	108, 139	Jones, D. C., wells on farm of.....	13
Lawrence County.....	83, 108		
Marion County.....	182	<b>K</b>	
Petty Township.....	139	Kane, prospecting near.....	16
Sandoval.....	182	Kirkwood, Thomas, development of Kirk-	
Structure of.....	109	wood sand.....	109
Thickness of.....	108	Kirkwood, R. M., No. 7 well, record of.....	69
Gas wells, price of per year.....	147	Kirkwood sand.....	15
Geological sections of central Illinois.....	26	Anticlinal dome in.....	110
Of southern Illinois.....	26	Correlation of.....	109, 182
Geologic structures.....	22	Development of.....	109
Georgetown, Ky., Indian Refining Co., at....	166	Drilling costs.....	153
Gillespie, E. N., record of Smith No. 24 well.	130	Dips of.....	111
Gilpin, J. Elliot, investigations of.....	20	Extent of.....	109, 111, 136
Grades of oil.....	167	In Bridgeport Township.....	137, 139
Grafton, prospecting near.....	16	Chester formations.....	84
Gravitation of oil, gas and water.....	22	Dennison Township.....	137, 140, 141
Gravity lines to leases.....	164	Lawrence County.....	109, 135, 138
Gray, W. B., record of No. 2 well.....	63	Lawrence Township.....	137, 139, 141
Greenville, correlation of sand .....	109	Petty Township.....	139, 140
Gas area near.....	182	Initial production of.....	109
Prospecting near.....	16	Intervals of.....	110, 111
Griswold, W. T., theories of oil accumulation.	24	Production of.....	135
Gushers from McClosky sand.....	135	Structure and thickness of.....	110
		Time required to drill to.....	153
		Type locality of.....	110
<b>H</b>			
Hamilton County, Illinois basin in.....	142		
Hansen, prospecting near.....	16		
Hardinville, gas areas near.....	97, 181		

## Index—Continued.

		PAGE
<b>L</b>		
LaSalle anticline.....	32	
Course and extent of.....	142, 144	
In, at or near:		
Champaign County.....	15	
Clark County.....	142	
Sadorus.....	142	
St. Francisville.....	142	
Tuscola.....	142	
Oil and gas on.....	143	
Prospective pools on.....	144	
Lawrence County, acreage drawn on by oil wells.....	151	
Bridgeport sand of.....	106	
Buchanan sand of.....	107	
Chester rocks of.....	83	
Cost of drilling in.....	153	
Development of.....	15	
Drilling time in.....	153	
Gas, depth of.....	182	
"Gas sand" in.....	83, 108	
Gas wells in.....	130	
Geology of.....	82, 83, 105, 142	
Importance of.....	135, 143, 161	
Kirkwood sand of.....	109	
McClosky sand of.....	112	
Production, initial.....	135, 136	
Production of sands.....	105, 135, 163	
Prospective pools in.....	144	
Salt water in.....	140	
Storage tanks in.....	165	
Stratigraphy of.....	54, 82	
Structure of.....	106, 114, 138, 140, 143	
Tracey sand of.....	84, 111	
Wells drilled in.....	135	
Lawrence Township, Buchanan sand in.....	107, 137	
Gas in.....	140	
Kirkwood sand, type area in.....	137	
McClosky sand in.....	137	
Productions, initial.....	135	
Salt water in.....	140, 141	
Structural relations in.....	137	
Wells in.....	135	
Lawrenceville, gas sold to.....	181	
Loading racks at.....	158	
Refinery at.....	166	
Lease, cost of operating.....	161	
Equipment.....	147, 157	
Use of.....	146	
Leasing of oil properties.....	146, 147, 148	
Lee County, gas in.....	182	
Lee Oil Co., purchased by Ohio Oil Co.....	163	
Lenses of oil sands.....	98, 109	
Levels in the oil field.....	87	
Lima, oil pumped to.....	165	
Limestone as the source of oil.....	18	
Lindley, correlation of Kirkwood sand.....	109	
Litchfield oil and gas sands.....	12, 13, 29	
Loading racks, construction of.....	158	
Locke level, use of.....	94	
Logs of cross-section A-A.....	115	
B-B.....	123	
C-C.....	125	
D-D.....	130	
Lovington, axis near.....	142	
<b>M</b>		
Macoupin County, prospecting in.....	15	
Marion County, correlation of Benoist sand.....	109	
"Gas sand" in.....	182	
Prospecting in.....	15	
Storage tanks in.....	165	
Marissa, prospecting near.....	16	
Martin Township, dome in.....	103	
Marshall, gas sold to.....	181	
Prospecting near.....	16	
<b>N</b>		
Martinsville, gas sold to.....	151	
Loading racks at.....	158	
Pumping station at.....	164	
Mascoutah, prospecting near.....	16	
McCleave, S. G., No. 4 well, record of.....	71	
McClosky, M., farm.....	112	
McClosky oil, sulphur in.....	113	
McClosky sand.....	15	
At, in or near:		
Bridgeport Township.....	139	
Dennison Township.....	137, 140	
Lawrence County.....	112, 135, 138	
Lawrence Township.....	137	
Petty Township.....	139	
Ste. Genevieve formation.....	31, 85	
Description of.....	85, 113	
Dips in Petty Township.....	113	
Drilling, cost of.....	153	
Time of.....	153	
Extent of.....	112	
Origin of oil from.....	18	
Production in Bridgeport Township.....	137	
Production, initial.....	113, 135	
Salt water of.....	140, 141	
Structural relations of.....	113, 136	
McLeansboro formation in Crawford County.....	32, 53	
McIlroy, prospecting by.....	15	
McOrr No. 1 well, record of.....	131	
McPherson No. 3 well, record of.....	67	
No. 4 well, record of.....	68	
Migration of oil.....	18	
Mississippian rocks, oil sands in.....	29	
In Lawrence County.....	83	
Missouri-Illinois Oil Co., shipments of.....	166, 169	
Montgomery County, prospecting in.....	12	
Montpelier, pumping station at.....	165	
Morgan county, gas wells in.....	183	
Muchmore, pumping station at.....	164	
Muddy Creek, pumping station at.....	164	
<b>O</b>		
Nashville, prospecting near.....	16	
Natural gas in Illinois.....	181, 183	
Origin of.....	18	
New Hebron, gas sold to.....	181	
Newlin, L. R., No. 21 well, record of.....	39	
Niagara limestone, oil in.....	13	
Nitroglycerine, use of.....	155, 156, 157	
Northern Illinois, geologic sections of.....	26	
North Fork, pumping station at.....	164	
North Fork Oil Co., purchased by Ohio Oil Co.....	163	
Nuttall, S. B., No. 5 well, record of.....	124	
<b>P</b>		
Oakland, prospecting near.....	14	
Oblong, gas sold to.....	181	
Loading racks at.....	158	
O'Donnel No. 28 well, record of.....	62	
Ohio Oil Co., acknowledgment to.....	12, 33	
Discovery of Buchanan sand by.....	107	
Operations of.....	146, 163, 164, 165, 166, 169, 175	
Oil, accumulation of.....	16, 18	
Amount of in Illinois.....	145	
Circulation of.....	18	
Development of, in Illinois.....	12	
Diffusion of.....	17	
Geological work on.....	24, 95	
Gravitation of.....	22	
In St. Louis limestone.....	31	
Origin of.....	16, 18	
Specific gravity of.....	20	
Structural relation of.....	100	
Storage of.....	147, 157, 164	
Sulphur in.....	21	
Value of, in Illinois.....	145	

## Index—Continued.

	PAGE
Oil fields, description of.....	97, 143
Levels in.....	87
Oil leases, specifications of.....	148
Oil sands, extent of.....	27
In Mississippian rocks.....	29
Oil tanks, use of.....	157
Oil wells, acreage drawn on.....	151
Elevation of.....	94
Near Litchfield.....	13
Oilfield, loading racks at.....	158
Prospecting near.....	14
Oklahoma, extent of petroleum land.....	145
Old Ripley, prospecting near.....	16
Olney, axis of Illinois basin near.....	142
Gas sold to.....	181
Prospecting near.....	16
Omaha, prospecting near.....	16
Ordovician system.....	32
Origin of oil and gas.....	16, 17, 18

## P

Palestine, gas sold to.....	181
Parker & Edwards, purchased by Ohio Oil Co.....	163
Parker Township, prospecting in.....	12, 14
Patton, prospecting near.....	16
Pennsylvania, extent of petroleum land in.....	145
Pennsylvania rocks, extent of.....	27
In Crawford County.....	53
In Lawrence County.....	82
Pepple, A., No. 7 well, record of.....	77
Perkins No. 16 well, record of.....	122
No. 17 well.....	121
No. 19.....	75
No. 22.....	120
No. 28.....	120
Perry King No. 5 well, Cen. Refin. Co., record of.....	128
Petty No. 1 well, record of.....	116
No. 3 well, record of.....	117
Petty Township, Bridgeport sand in.....	137
Buchanan sand in.....	136
Drift in.....	82
Gas in.....	138, 139
"Gas sand" in.....	108, 110, 136
Kirkwood sand in.....	110, 136, 139
McClosky sand in.....	113
Oil in.....	136
Production, initial yield.....	135, 136
Salt water in.....	140
Structural features in.....	113, 136
Structural relations of oil and gas.....	139
Tracey sand in.....	139
Wells in.....	135
Phillips, J. S., prospecting of.....	14
Pike County, gas in.....	13, 16, 182
Pinkstaff, gas sold to.....	181
Pipe-lines, use of, in Illinois.....	148, 167, 169
Piper No. 9 well, record of.....	118
No. 10 well, record of.....	81
Pleistocene in Crawford County.....	52
In Lawrence County.....	82
Pocahontas, prospecting near.....	16
Pollution of streams by waste oil.....	160
Porosity of sands.....	23
Portable drilling rigs, use of.....	153
Porterville, gas sold to.....	181
Pottsville formation, description of.....	29
In Crawford County.....	54
In Lawrence County.....	82
In Macoupin County.....	15
Salt water in.....	29, 140
Structure of.....	29
Studies of.....	29
Thickness of.....	29
Pressure of drift gas.....	183
Of gas in Robinson pool.....	103
Of oil in pipe lines.....	165
Princeton, Ind., prices of oil at.....	169

	PAGE
Prospective pools of Crawford and Lawrence counties.....	144
Pull rods, use of.....	159
Pumper, wages of.....	161
Pumping equipment.....	159
Pumping stations in Illinois.....	164, 165
Pure Oil Co., pipe lines of.....	166

## R

Randolph County, correlation of sand.....	109
Prospecting in.....	13
Rank of Illinois as gas state.....	181
Rank of producing states.....	170, 171
Red shale, distribution of.....	28, 84, 109
Richview, prospecting near.....	16
Riddle Oil Co., purchased by Ohio Oil Co.....	163
Rig, building of.....	152
Robinson, gas sold to.....	181
Loading racks at.....	158
Refinery at.....	166
Robinson Oil Co., refinery at Robinson, Ill.....	166
Robinson pool, accumulation in.....	104
Anticlines in.....	99
Development of.....	14
Extent of.....	97, 99, 100, 104
Gas in.....	103
Production of.....	100, 103
Salt water in.....	103, 104
Structure of.....	99
Syncline in.....	99
Robinson sand, absence of.....	98
Correlation of.....	98
Description of.....	97, 98
Gas in.....	99
Oil in.....	100
Production of.....	100
Thickness of.....	98, 100
Robinson Township, prospecting in.....	13
Gas in.....	103
Rock pressure, effect of.....	20
Roger and Dibble, shipments of.....	166, 169
Royalty, payment of.....	147

## S

Sadorus, anticline near.....	142
St. Francisville, anticline near.....	142
Salt water in:	
Robinson pool.....	104
Bridgeport sand.....	140, 141
Bridgeport Township.....	140
Buchanan sand.....	107
Dennison Township.....	141
Kirkwood sand.....	140, 141
Lawrence County.....	140
Lawrence Township.....	140
McClosky sand.....	140, 141
Petty Township.....	140
Pottsville formations.....	29, 140
Synclines.....	103, 104, 140
Tracey sand.....	141
Salt water, siphoning of.....	159
Sandoval, "Gas sand" near.....	182
Oil prices at.....	169
Prospecting near.....	15
Pumping station at.....	164
Sands, correlation of.....	95
Names of.....	95
Porosity of.....	23
Saturation line of sands.....	113
Savage, T. E., work of.....	28
Seed, H. K., No. 1 well, record of.....	132
No. 2 well, record of.....	131
No. 7 well, record of.....	61
Shale as the origin of oil.....	17, 18, 21
Shallow sands, distribution of.....	29, 99, 106
Shiltz, M., No. 7 well, record of.....	33



## *Index—Concluded.*

	PAGE
Shipman, pumping station at.....	164
Shire, J. W., farm of.....	14
Shooting oil wells.....	155, 156, 157
Siler, C. E., No. 4 well, record of.....	41
Silurian formations.....	31
Smith No. 24 well, record of.....	130
Snyder, W. H., No. 7 well, record of.....	55
Southern Illinois, geological sections of.....	26
Sparta oil field.....	15
Sparta sand, correlation of.....	109
Specific gravity, effect of.....	20
Specifications of oil leases.....	148
Spudding, method of.....	154
Sta. Genevieve limestone, description of.....	31, 84, 113
In Lawrence County.....	84
In Monroe County.....	84
St. Louis limestone, description of.....	85
Distinguished from Sta. Genevieve.....	113
In Lawrence County.....	85
Oil in.....	31
Standard rig, use of.....	152, 153
Statistics, method of compiling.....	169
Steel derrick, use of.....	153
Stein farm, oil on.....	15
Stoltz No. 13 well, Bridgeport Oil Co., record of.....	125
Storage tanks.....	166
Stoy, gas sold to.....	181
Loading racks at.....	158
Pumping station at.....	164, 166
Tank farm at.....	166
Stratigraphy, definition of.....	25
Of Bridgeport sand.....	106
Of Chester rocks.....	31
Of Crawford County.....	32, 53, 54
Of Illinois.....	25
Of Lawrence County.....	32, 54, 82
Of Pottsville formations.....	54
Of Sta. Genevieve limestone.....	31
Stream pollution by oil.....	160
Structure, definition of.....	25
Of Buchanan sand.....	107
Crawford County.....	99
"Gas sand".....	109
Illinois.....	32
Kirkwood sand.....	110
LaSalle anticline.....	142
McClosky sand.....	113
Pottsville sand.....	29
Tracey sand.....	112
Shown by cross-sections.....	12
Relation to oil, gas and salt water.....	100, 103
Sulphur in McClosky oil.....	113
Method of removal.....	159
Sumner, gas sold to.....	181
Prospecting near.....	16
Sumner quadrangle, description of.....	86, 89, 93
Sun Oil Co., shipments of.....	166, 169
Syncline, definition of.....	22

**T**

Terrace structure.....	23
Tanks, for storage.....	147, 158, 165, 166
Tank-cars of Indian Refining Co.....	166
Theory of origin of oil.....	11
Of water saturation.....	24
Thomasboro, prospecting near.....	16
Thompson, D. G., work of.....	12
Tidewater Pipe Line Co., pipe lines of ....	166, 169
Tolono, prospecting near.....	15
Topographic surveys of oil areas.....	86
Townships, abbreviation of.....	96
Tracey, pumping station at.....	164

	PAGE
Tracey, R. J., farm, Tracey sand on . . . . .	111
Tracey Heirs No. 1 well, record of., . . . . .	134
Tracey sand. . . . .	15
Character of. . . . .	111, 112
Development of. . . . .	111
Drilling, cost of. . . . .	153
Gas in. . . . .	138, 139
In Dennison Township. . . . .	138
Lawrence County. . . . .	84, 111, 135, 138
Petty Township. . . . .	139
Oil from. . . . .	18
Structure of. . . . .	112
Type localities of. . . . .	111
Transporting oil. . . . .	163, 164
Trenton, prospecting near . . . . .	16
Tribune formation, description of. . . . .	31, 83
In Lawrence County. . . . .	83
Tubing for wells. . . . .	157
Tuscola, course of anticline near. . . . .	142

## v

Udden, Dr. J. A., work of.....12, 28, 34, 53, 55  
Ulrich, description of Ste. Genevieve lime-  
stone by.....54  
U. S. Geological Survey, work of.....56, 57

**V**

Vandalia, prospecting near.....	16
Vincennes, gas sold to.....	1-1
Vincennes quadrangle, description of.....	86, 93, 94
Vanatta No. 1 well, record of.....	20
No. 7 well, record of.....	78

**W**

Wapella, drift gas near.....	153
Waste-pits, use of.....	159, 160
Water saturation line of LaSalle anticline.....	143
Waterloo, prospecting near.....	16
Watson, W. F., shipments of.....	162
Waverly, prospecting near.....	16
Wayne County, basin in.....	142
Well or wells:	
Abandoned in Illinois.....	181
Completed in Illinois.....	179
Drilled in Lawrence County.....	135
In Illinois.....	12
Off-setting of.....	151
Well data, tables of.....	185
Well locations.....	151
Well numbers, system of.....	96
Well records, collection of.....	94
Well samples, examination of.....	34
Wellsites, choosing of.....	151
Well supplies, cost of.....	161
Westfield, gas sold to.....	181
West Virginia, extent of petroleum land.....	145
White, David, study of Pottsville.....	29
Wild-cat drilling.....	152, 162
Willey No. 4 well, record of.....	76
No. 11 well, record of.....	128
Wilson, J. E., No. 21 well, record of.....	49
Wood No. 13 well, record of.....	79
Wright, Douglas, work of.....	12

## Y

**Young farm, prospecting on..... 14**









3



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